Assessing the Financial Performance of Islamic Banking:

The case of Sudanese banks

ENTISSAR MOHAMED ELGADI

A thesis submitted in partial fulfilment of the
Requirements of the University of East London
for the degree of Doctor of Philosophy

School of Business and Law

April 2016

Acknowledgement

First of all, my gratitude goes to Allah SWT, the Most Gracious and the Most Merciful.

I offer my sincerest gratitude to my Director of Studies, Professor John Chandler, for his helpful comments and suggestions. Without his immense support, this thesis would not have been completed.

I am also grateful to Dr Peiyi Yu, my second supervisor, for her tremendous guidance and supervision. Her critical feedback helped me to produce this work and also enhanced my understanding of the subject area.

I am also thankful to my external advisor, Dr Gaffar Khalid, for his excellent comments on various aspects of this research and on Islamic banking and finance issues.

I extend my sincere thanks to the staff of Central Bank of Sudan as well as those of Bank of Khartoum and other Sudanese Banks.

Finally, and most importantly, I extend my deepest gratitude to my family, for their endless patience and support. In particular, I thank my wonderful mother, Nimaat, for all her support, both morally and emotionally, which has kept me going all this while. Special thanks are also due to my lovely husband, Sami, for his patience, understanding and encouragement. In addition, I wish to thank my four precious children, Mohamed, Maab, Mumin and Moneeb, for their endless patience and understanding throughout these years. I also give great thanks to my siblings who have given me the strength to carry on, despite our distance.

Abstract

This research aims to explore and investigate the interrelationship between performance measures and determinants of Sudanese Islamic banks. To generate a comprehensive picture of such interrelationship, three models are built.

To achieve the study objectives a secondary source of information presented in the annual reports of twenty-seven Sudanese Islamic Banks, covering the period 2005-2013, was utilised.

Empirical evidence from the first model indicates that the management of Sudanese Islamic Banks lacks the capability to predict and avoid the risk associated with leverage.

With regards the profitability determinants, in relation to the Islamic banking industry, the model prove that PLS (Modarabah and Mosharakah) have a significant positive impact on profitability. This is due to the policy of the Central Bank of Sudan which encourage banks to use Mosharakah mode for financing all economic activities as well as giving each bank the right to determine the Modarabah's percentage share in the profits.

Evidence from the second model shows that the presence of women in departmental managers' positions has significantly negative impact on the profitability of banks. This due the restricted role of women in the Islamic culture which lead women to have career development barrier.

Meanwhile, due to coordination and communication problems resulting from enlarging the board size and higher cost of directors' salaries and remunerations, the impact of the size of the board of director on the profitability of Sudanese banks is proved to be negative and significant.

Findings from the third model suggest that females' departmental managers at Sudanese banks have a risk aversion attitude which leads to more performance stability of these banks.

Finally, the model proves that the proportion of Ph.D. holders in corporate governance positions enhance the managers' understanding of decision making and risk taking techniques.

Table of Contents

List of Tables

Table of Figures

Chapter One

Introduction

1.1. Research Background

Since Sudan's independence in 1956, the Sudanese Banking Industry has passed through many phases. The first phase was the transformation from a totally traditional banking system to a dual banking system, which includes a traditional and Islamic banking. The final stage saw the transformation to a total Islamic banking, which involved a complete adherence to pure Islamic financial rules, and thus making Sudan become one of only two countries in the world to adopt such a system (Pakistan and Iran been the others).

The country has also witnessed a civil war, which has exhausted the Sudanese economy for more than two decades and ended with the secession of some of the southern parts of the country from the north in 2011. Recent years also witnessed the discovery and production of oil in Sudan, which is considered to be a significant boost to the economy. All these transformations and events justify the importance of studying the performance of Sudanese banks.

In summary, this study uses latest approaches to identify a set of main performance determinants and their impact on the performance of Islamic banks operating in Sudan. To evaluate the performance of Sudanese banks, profitability measures were assessed, and for a comprehensive understanding, risk measures were also analysed, with a particular focus on corporate governance. Risk measures are included because in recent years it has been shown to have a great impact on performance

1.2. Research Problem

The first generation of Islamic banks in Sudan was established in the 1970s. Since then, however, no in-depth practical study has been conducted to comprehensively assess their performance in terms of profitability and risk. It is thus essential to evaluate the financial performance of these banks using these two performance measures so that professionals and academics are offered a clear view of the performance of Sudanese Islamic banks. This becomes more important when considering the fact that Sudan is one of only three countries that are fully committed to the Islamic financing system. It is, therefore,

important to recognize factors that impact the performance of Sudanese Islamic banks so as to provide both academics and professional with a deep understanding of the practice of Sudanese Islamic Banks performance.

1.3 Research aims and Objectives

The broad aim of this research is to identify the internal factors that affect the profitability of Sudanese Islamic Banks. The period analysed is from 2005 to 2013. Although data availability prior 2005 is very limited, the period of 2005-2013 provides a solid data set to perform the required analysis and achieve reliable results. The study will also compare the impact of the designed profitability determinants on state-owned banks and private banks performance.

Aside from identifying the impact of profitability determinants, the research also aims to provide evidence on the impact of the structure of corporate governance of these banks on their profitability and risk-taking behaviour. In this respect, three factors – gender diversity in top management, educational background of the members of the top management team and size of the board of directors – are focused upon.

More specifically, the research seeks to accomplish the following objectives:

1. To explore the major performance characteristics of Sudanese Islamic Banks.
2. To define the major profitability determinants of Sudanese Islamic Banks.
3. Compare and evaluate the financial performance of state and private owned Sudanese Islamic Banks.
4. To investigate and compare the relative importance of each profitability determinant on the performance of the two sets of banks.
6. To investigate the relative importance of gender diversity on the profitability of Sudanese Islamic Banks.
7. To investigate the relative importance of gender diversity on the risk-taking behaviour of Sudanese Islamic Banks.

Bearing in mind that sustainable profitability and healthy performance are vital in maintaining the stability of the banking system (Vong and chan 2009; Flamini *et al*., 2009; Javaid *et al*., 2011), the study attempts to identify the profitability and risk

determinants of Sudanese Islamic Banks in order to provide practical overview of performance in these institutions.

1.4. Research Questions

In line with the research aim and objectives the study seeks to answer the following questions:

1. What is the current practice of the financial performance of Sudanese Islamic Banks in terms of profitability?
2. Does the existence of gender diversity on corporate governance of Sudanese Islamic Banks affect their profitability performance?
3. Does female representation in the corporate governance of Sudanese Islamic Banks impact bank risk performance?
4. What is the impact of board of directors' size on the performance of Sudanese Islamic banks?
5. Does the existence of a highly educated top management team impact risk performance in Sudanese Islamic banks?

In order to answer question **one** the following sub-questions are proposed:

1.1 Does liquidity (cash availability) affect the profitability of Sudanese Islamic Banks? Does it have the same effect on both state-owned and private banks?

1.2 Does capitalisation (paid up capital and reserves) affect the profitability of Sudanese Islamic Banks? Does it have the same effect on both state-owned and private banks?

1.3 Does leverage (gearing) affect the profitability of Sudanese Islamic Banks? Does it have the same effect on both state-owned and private banks?

1.4 Does assets utilisation (ideal use of assets) affect the profitability of Sudanese Islamic Banks? Does it have the same effect on both state-owned and private banks?

1.5 Does overhead expenses (staff expenses) affect the profitability of Sudanese Islamic Banks? Does it have the same effect on both state-owned and private banks?

1.6 Does management efficiency affect the profitability of Sudanese Islamic Banks? Does it have the same effect on both state-owned and private banks?

1.7 Does credit risk (probability of losing all or part of loan or assets) affect the profitability of Sudanese Islamic Banks? Does it have the same effect on both state-owned and private banks?

1.8 Does bank size (total assets) affect the profitability of Sudanese Islamic Banks? Does it have the same effect on both state-owned and private banks?

1.9 Does ownership type affect the profitability of Sudanese Islamic Banks?

1.10 Does commitment to profit and loss sharing (PLS) modes of finance and/or non-PLS modes of finance (principals of Islamic finance on which Islamic banks' operations are based) affect the profitability of Sudanese Islamic Banks? Does it have the same effect on both state-owned and private banks?

1.11 Does Commitment to the agricultural sector through Salam mode of finance (a kind of contract which is usually used to invest in agricultural production) affect the profitability of Sudanese Islamic Banks? Does it have the same effect on both state-owned and private banks?

In order to answer question **two** the following sub-questions are proposed:

2.1 Does female representation on the board of directors impact the profitability of Sudanese Islamic Banks?

2.2 Does female representation at the departmental managers' level impact the profitability of Sudanese Islamic Banks?

In order to answer question **three** the following sub-questions are proposed:

3.1 Do female board members encourage a less risky conduct of business?

3.2 Does female representation at the departmental managers' level encourage a less risky conduct of business?

In order to answer question **five** the following sub-questions are proposed:

5.1 Do highly educated board members increase or reduce bank risk-taking?

5.2 Do highly educated departmental managers increase or reduce bank risk-taking?

1.5. Research Contributions and Significance

There is extensive empirical literature investigating the financial performance of the Islamic Banking industry including bank profitability, efficiency/productivity, competition, and risk. Few examples of these literature are Haron (1996), Iqbal (1997), Bashir (2001), Haron (2004) and Siddiqui (2008). In the Sudanese Islamic Banking context, a few research, though not in-depth, have been conducted in the area of financial performance assessment; e.g. Hussein (2003), Abdel Mohsin (2005), Ahmed (2008) and Alam (2010). However, the questions of profitability determinants and the impact of the structure of corporate governors on bank risk-taking in Sudan were elided.

In essence, this research contributes to existing knowledge on banks performance by extending the current literature in the following directions:

1. The study provides an examination of the impact of a comprehensive set of internal profitability determinants on the profitability of Sudanese Islamic Banks. This, it is believed, will create a solid base for understanding the actual profitability determinants of these banks.

2. The study will be the first to investigate and compare the impact of profitability determinants on the two categories of Islamic Banks that are operating in Sudan (the state-owned and privately owned banks). By so doing, it is hoped the findings of this study will be instrumental in helping these banks to improve their financial performance as well as benefit from each other's experiences.

3. The study will also be the first to investigate the effect of PLS versus non-PLS modes of finance on the profitability of Sudanese Islamic Banks; at this stage, it is worth mentioning that all Islamic banking and finance processes are based on PLS or non-PLS methods of finance. Therefore, the study will assess and compare the impact of the two methods on the profitability of Sudanese Islamic Banks.

4. Based on the fact that Sudan is famous for its agricultural lands, the study investigates the effect of Salam mode of finance on the profitability of Sudanese Islamic Banks. Findings of such investigation, it is hoped, will show whether Sudanese Banks is well positioned to play a major role in enhancing the agriculture industry and supporting the Economic and social development of the country.

5. In addition, this research will also be the first to investigate the impact of corporate governance, in terms of gender diversity, education and the board size, on the profitability and risk of Sudanese Islamic Banks.

Overall, at the academic level, the study will fill the gap in the literature on financial performance and corporate governance in Sudanese Islamic banking industry by explaining the main characteristics and determinants of Sudanese Islamic Banks' performance.

1.6. Research Data and Methodology

To achieve the study objectives, the researcher utilises secondary sources of information presented in the annual reports of twenty-seven Sudanese Islamic Banks over the period 2005-2013. These twenty-seven sets are what were available from the thirty-six banks currently operating in Sudan. The sample represents the major Sudanese banks that have consistently published financial statements over the study period. These data were collected from the Banks' database, where available, and the banks' official reports: banks' financial statements, particularly balance sheet and profit and loss statements were the main source of data relating to internal determinants. The banks' balance sheet items were viewed as typically reflecting the bank's management behaviour, in terms of policies and decisions that are related to the sources, composition, and utilisation of the bank's funds. Additionally, the bank's profit and loss statements are viewed to reflect the management's effectiveness in creating revenues and managing costs.

The researcher follows Short (1979), Bourke (1989), Bashir (2000), Naceur (2003), and Hassan and Bashir (2003) method of using the linear functional form in the empirical analysis. This form implies that the relationship between the variables is linear. In addition, the researcher used the pooled and panel estimation methods to examine the interrelation between bank performance measures and performance determinants. By applying the pooled and panel estimation methods, the researcher makes use of its advantage of providing more informative analysis, more degrees of freedom, more variability, less collinearity among variables, and a higher degree of efficiency.

The pooled estimation method is based on the assumptions that the intercept value, the coefficients of all the independent variables and constant are all the same for all the banks and over time. Furthermore, the method assumes that the error term captures the differences between banks over the time.

To gain broader choices on the nature of the impact of the independent variables on the dependent one, the study applies the panel estimation method which considers any cross banks' differences among performance determinants.

In the literature, there are two kinds of panel estimator approaches that can be used in financial research: fixed effects models and random effects models (Tanya, 2014). The researcher employed the two types of models to estimate the impact of the independent variables on the dependent one. The fixed effects model is based on the assumption of the individuality of each cross-sectional unit (bank) by letting the intercept vary for each company. However, it continues in assuming that the slope coefficients are constant across time. On the other hand, the Random Effects Model suggests different and constant intercept terms for each company. It also assumes that the interrelationships between the explanatory and explained variables are same, both cross-sectionally and over time.

It is worth mentioning that while the likelihood test is used to select between the pooled and panel models, Hausman test is used to choose between the fixed effect and the random effect models.

1.7. Research Structure

The study is composed of twelve chapters. The details of these chapters are as follows:

Chapter One: Is the introductory chapter. It highlights the research aims, objectives, justifications, and contribution.

Chapter Two: Provides an overview of Islamic banking and finance, its definition, principals and the operational aspects associated with the industry.

Chapter Three: Provides an overview of the Sudanese economy and the development of the banking industry in Sudan.

Chapter Four: Reviews past literature, especially those that have investigated bank's profitability in various countries. These studies are divided into two categories; single country and multi-country studies. Each category is subdivided into studies that focus on traditional banks and studies that focus on Islamic banks.

Chapter Five: Is devoted to the theoretical framework of the determinants of banks' financial performance.

Chapter Six: This chapter reviews the methodological approaches that are used to estimate the key determinants of the banking industry in Sudan, from 2005 until 2013. It also outlines the three steps and the alternative parametric linear functional form which are employed by the researcher to measure the impact of each profitability factor.

Furthermore, this chapter describes the dataset and the variables used for the empirical analysis. The chapter also discusses the operational definitions of the variables.

Chapter Seven: Presents the results of the empirical analysis of the first set of profitability determinants and their impact on the profitability of Sudanese Islamic Banks. Additionally, the chapter shows the findings of the comparison between profitability determinants of private and state banks.

Chapter Eight: Presents findings of previous studies on corporate governance, including the impact of gender diversity of the top management positions and size of the board of directors on firms' profitability in general, and banks' profitability in particular. The chapter also defines the various sets of determinants for the second model.

Chapter Nine: shows the empirical results of the impact of the second set of profitability determinants on the profitability of Sudanese Islamic Banks.

Chapter Ten: Contains the literature review on the relationship between bank risk and corporate governance, including gender diversity and education. The chapter also defines the various sets of determinants for the third model

Chapter Eleven: Provides empirical results on the third set of performance determinants on risk-taking behaviours of Sudanese Islamic Banks.

Chapter Twelve: This chapter offers summary and conclusion of the study and also draws attention toward the potential future research.

Chapter Two

Islamic Banking

2.1. Introduction

Since the last decade, Islamic finance has become one of the fastest growing sectors in the worldwide financial industries. Even after the latest financial crisis, Islamic finance was able to show a remarkably average annual growth of 15% to 20% (Weill, 2010 and Ibrahim *et al*., 2012). Sharia-compliant products increased from US$450 billion in 2006 to beyond US$1 trillion in 2010. It has also been estimated that the assets under Islamic management have grown from US$150 billion in the mid-1990s to US$700 billion in 2007 (Ibrahim *et al*., 2012).

Iqbal, (2001) reports that the continuing, steady growth and expansion of Islamic banking has been witnessed since the first generation of Islamic banks was established in the Middle East. This expansion takes three forms. The first one has been seen in the foundation of Islamic Banks worldwide, even in non-Muslim countries, including USA and Europe (Siddiqui, 2008; Iqbal, 2001). The second form of expansion is seen as a full conversion to the entire Islamic financial system in a number of Muslim countries. This includes Pakistan, Iran, and Sudan (Iqbal, 2001). Finally, several established conventional institutions have realized the profitable prospect of the Islamic financial market and have taken practical actions by investing in Islamic financial windows (Othman, 2012 and Solé, 2007). Therefore, Islamic banks nowadays serve both Muslim and non-Muslim financial systems and customers. Othman (2012) reports that many indicators show that Islamic finance is no longer a second alternative after conventional banking as it is seen as a desirable option to the deep-rooted conventional banking system. This chapter aims to shed light on the Islamic banking nature, its definition and the principles of an Islamic financial system under which the Islamic banks operate. It also highlights the sources of funds available to Islamic banks and the modes of finance, which are used in employing these funds.

2.2. Definition of an Islamic Bank

The term Islamic banking refers to a full set of banking operations in accordance with Islamic principles. Kouser *et al.,* (2011, p.55) define Islamic banks as "*a complete system based on Islamic rules of financing".* Another definition of the system was by Ali and Farrukh (2013, p.28) who reports that Islamic banking system refers to "*a conduct of banking operation in consonance with Islamic teachings*". Čihák and Hesse (2008, p.4) define Islamic banking as "*the provision and use of financial services and products that conform to Islamic religious practices and laws".* Although these definitions have introduced an Islamic banking system in terms of its operating principles, rules, and products, it lacks the important component of land regulation. The definition does not consider where the Islamic banks trade (which may have rules they may have to abide by). The land law component was considered when defining Islamic banking by Ebrahim and joo who in 2001 gave a more comprehensive definition in which they report that "*an Islamic bank is one that by its own choice opts to comply with two sets of law: the law of the Land (Jurisdiction); and the Islamic Law (Sharia)".* Therefore, Islamic banks need to reconcile their positions to coordinate between the possible conflicts that can appear when having some lands in non-Islamic law countries.

All the above-mentioned definitions agree that the uniqueness of Islamic banking system lies in their objectives. These pass the absolute freedom of the ways of achieving profits to comply with ethical, economic, social and political restrictions of the Islamic laws

Ibrahim *et al.,* (2012) report that the principles of Islamic finance are distilled from the Islamic law (Sharia), which is represented by the Holy Quran, the *Sunnah* (the sayings and actions of Prophet Mohammed peace be upon him) and the *Figh*, which embody interpretation of the Shariah rules by Islamic scholars. Consequently, to consider an Islamic financial product as *Sharia* compliant the product have to be investigated by Islamic scholars to decide if it is well thought-out according to *Sharia* rules and values. If the product is proved as *Sharia* compliant, it could then be announced to investors. Ibrahim *et.al* (2012) argues that it is the responsibility of the Islamic scholars to guarantee that the Islamic product is in line with being *Sharia* compliant.

Further explanations for the nature of Islamic banking has been given by Dar and Presley (2001)**,** who report that similar to conventional banks, the Islamic bank does play an intermediary role and trustee of other people's money. However, the key difference that distinguishes Islamic banking from the conventional banking system is that Islam prohibits Muslims to receive or pay any interest (return of money on money), which results from the banking transactions (namely from loan and fixed deposit). Another term that can be used for any return of money on money is usury (*Riba*). Ibrahim *et al.,* (2009) and Abedifar *et al.,* define usury as any return of money on money lending; whether this return is fixed or unfixed, simple or complex and at whatever the rate of this return is. Ghannadian and Goswami (2004) state that some scholars have clarified *Riba* as any type of interest payments, whilst others interpreted it to include only the extreme interest payments.

The reasons behind this prohibition have been explained by Ghannadian and Goswami (2004), who report that the elimination of interest payment under Islamic *Sharia* comes from dealing with money only as a means of exchange, no more, no less. In other words money in itself does not have any added value, and therefore, it should not lead to more money. Thus, if money is being deposited in a bank or borrowed to someone, no certain return (interest) should be gained or derived from it.

Furthermore, Derbel *et al., (*2012) refer the term *Riba* as the offence committed by one who lends money at an extremely high rate, whilst he defines the term interest as the amount paid for the use of money. Further opinion has been given by Ariff (1988), who argues that the general agreement among Muslim scholars is that there is no differentiation between usury and interest. Accordingly, any predetermined rate of return for money on money, even if it is large or small is strictly prohibited in Islamic law. Whatever the nature of this continuing debate on the true meaning and difference of *Riba* and interest, Ibrahim *et al*., (2012) argue that widespread interpretations of the Islamic principles suggest that the ban of *Riba* implies a prohibition on interest. Siddiqui (2008) and Ali and Farrukh (2013) report that Islamic banks are established to hold their activities in strict obedience to Islamic *Sharia* rules and moralities that prohibit Riba.

2.3. Importance and Aims of an Islamic Financial System

The rationale behind the importance of Islamic banks comes from the prohibitions of any interest within *Sharia* law, regardless of its rates and time of charge (Ariff, 1988 and Ali and Farrukh, 2013). Therefore, Islamic banking has been found to serve the nations who are willing to keep or invest their money in accordance with the traditions, customs, and values of Islamic law.

With regards to the aims of Islamic financial system, as mentioned above, Dar and Presley (2001) report that similar to non-Islamic banks, an Islamic bank aims to perform intermediary role and trustee for other people's money with profit maximisation intention. Derbel *et al*., (2011) also report that the intention of a financial institution, whether it is Islamic or not, is to employ the financial resources and distribute them among different investment plans aiming to optimize both profitability and risk of these investments. However, the basic principles which govern an Islamic financial system are different from the essence of non-Islamic finance, as the profitability is not the only nor the main decisive factor for the Islamic financial institutions and consequently Islamic banks.

Ebrahim and Joo (2001) report that the main goals of an Islamic banking and financial system are to:

a. Realize the value systems of the Qur'an and the *Sunnah* (saying and actions of Prophet Muhammad peace be upon him) in Muslim socio-economic system.

b. Promote the growth of the economy for Muslim nations by aiding financial markets. A well-developed Islamic financial market will have a great reflection on Muslim communities.

c. Reduce the possibility of being exposed to an economic crisis by promoting risk-sharing instruments. Financial services with fixed costs can aggressively consume the resources of borrowers during a slowdown, which can lead to bankruptcies and consequently economy impairment. An Islamic financial system is extremely interested in economic growth; however, Islam financial philosophy and consequently Islamic banking deal with this as a vital element of wider problems of total human development. Islamic banking, as one of the main instruments of the Islamic financial philosophy, aims

to lead human development in the correct direction. Therefore, the system deals with economic aspects of development in the context of total human development.

This does not mean that banks should disregard profit maximization plans, but it calls attention to comprehensive financing plans that can incorporate the above-mentioned aims to be considered besides profitability.

2.4. Principles of an Islamic Financial System

The rationale behind financial systems, whether they are conventional or Islamic, is to utilise the resources in an optimal method, through directing or redirecting these recourses to different investment projects, in order to attain profit maximization. Nevertheless, the core rationales which rule the Islamic financial system is not solely profit-maximization. Profitability is neither the only nor the decisive factor of the theory for Islamic finance. Sharia rules, which governs Islamic finance, is characterised by an integrated and comprehensive framework that direct an economic, social and political life (Derbel *et al*., 2011). Therefore, the principles of an Islamic financial system reflect the interest of *sharia* on the consequences of the financial structure of other aspects of life. Derbel *et al*., (2011) report that the object of such a system lies in the aspiration to ensure that different Islamic financial products are compatible with legal and moral values of Islam.

The following section explains the main principles of Islamic finance, which are founded by both *Sharia* and other jurisprudence or rulings, known as *fatwa*, issued by qualified Muslim scholars. These principles are risk sharing, as well as the prohibition of interest, activities with an element of uncertainty (Gharar**)**, gambling (Maisir**)** activities, the production and sale of goods and services that are forbidden in Islam and zakah.

2.4.1. Prohibition of *Riba* (interest)

From the etymological standpoint, the term *Riba* is derived from the Arab word “arba”, which means to enlarge or to boost. According to the Muslim jurisprudence, *Riba* is defined as any financial benefit or excess established by one of the contractors without justifiable and satisfactory equivalent (Derbel *et al*., 2011).

2.4.1.1 Prohibition of Interest in Other Religions

Visser and McIntosh (2007) report that interest or usury, whether it is at a low or excessive rate has been practiced in different parts of the world for no less than four thousand years. During this time, there is considerable evidence of a strong displeasure by different traditions, foundation and community reformers on the ethical, religious and formal basis. The logic and arguments employed by these widespread critics have included work morals, community fairness, economic insecurity, and other aspects. Further evidence for the existence and prohibition of interest in history has been brought to existence by AL Manaseer (2009). He reports that Aristotle disagreed with any amount of interest because he considered money as “sterile", which means that it is not supposed to have the ability to increase unless it is serving certain purposes. He also provided evidence on cancellation of all private and public debts by authorised individuals in old Republican Rome in 594 BC, as they prohibited interest.

Derbel *et al*., (2011) report that barring the practice of interest is not voiceless in other religions as it has been found in Judaism, Christianity, as well as Hinduism and Buddhism. AL Manaseer (2009) brings evidence that in Judaism, interest (whether it had been charged on money, food or anything else) was seen as unacceptable and an unjust action, especially if it has been charged for amongst their own nationality. Therefore, Jewish societies used ban interest among themselves, but allow interest on money lending to other nationalities. Visser and McIntosh (2007) report that Jewish philosophy supports the prohibition of interest in order to support the morals of their society. Consequentially, this benevolent nature of the prohibition on interest implies that its contravention was not seen as an illegal offense that required legal sanctions, but fairly as an ethical misconduct.

Concerning prohibition of interest in Christianity, AL Manaseer (2009) reports that during the Roman Empire, the church prohibited the clergy from accepting interest. Furthermore, in the eighth century, usury was seen and dealt as a criminal offence, because there was general belief that money is not a commodity and was principally made for exchange. However, as time progressed, interest was no longer considered as a criminal offence, because there were strong developments in supporting interest, which meant that the charging of cautious amounts of interest became an acceptable practice. However, to prevent the extreme rate of interest, authorities established the highest

interest rates that lenders cannot exceed. AL Manaseer (2009) also reports that this practice is still applicable in many countries around the world.

2.4.1.2. Prohibition of Interest (Riba) in Islam

The prohibition of *Riba* in Islam is solely from the Quran and the Sunnah (the sayings and doings of the prophet Mohammed SAW).

According to the Islamic financial system, the exchange between the buyer and seller is permissible. The understanding behind the legality of sales and exclusion of Riba in Islam has been explained by Ebrahim and Joo (2001). They report that the financial exchange between the buyer and the seller is seen as justifiable because the profit is equivalent to the labour and time and risk is undertaken to secure or develop specific commodity to satisfy the seller. On the other hand, interest is deemed unfair, because the lender is legally assured of his principal and premium loan at the time of the agreement. This means that the interest paid is not based on the risk taken, labour and the time undertook to develop the commodity. From an Islamic ethical point of view, the use of interest is oppressive to the borrower, especially in a product or economic collapse.

According to the Islamic principles, there are two types of *Riba: Riba al-nasi'ah (nasi'ah* means delay) or credit *Riba'* and *Riba al-fadl* surplus *Riba* (excess in spot transaction).

Benamraoui (2008) who defines *Riba-nasi'ah* as an increase based on deferment. Abdul Rahman (2007) explains that this type of Riba occurred when there is a delay in payment of an outstanding debt, whether the debt is a result of sold commodity or money lent. He reports this kind of *Riba* comes from a fixed return of money that will be given to the loan provider following a certain period of time from when the principal amount was given. Abdul Rahman also reports that if the borrower exceeds the time allowed to return the money, they will be expected to pay an additional amount of interest. A further definition of credit *Riba* has been found by Ebrahim and Joo (2001) who referred to it as an arrangement of loans with a premium on the top of the principal amount that is being borrowed until a specific date, in other words, a predetermined interest on a debt agreement.

The second type of *Riba*, surplus *Riba or Riba' al-fadl*, is more concerned with six kinds of goods (gold, silver, wheat, barley, salt, and dates), which are forbidden according to the Islamic Sharia from being traded for the same type of items but with a difference in amount. This kind of *Riba* has been defined by Benamraoui (2008) as an increase based on the difference in quality. Another definition of *Riba'* al-fadl comes from Ebrahim and Joo (2001), who define this kind of *Riba'* as an increase of additional cost based on the difference in quality. Although this definition shades light on the nature of this kind of *Riba*, clearer explanation has been given by Abdul Rahman (2007). He defined *Riba' al-fadl* as the exchanging of any of the same six mentioned items with a disparity in amount. He reports that this includes a differentiation in the quantity specified in the original contract, or as a result of the delay in the delivery of the commodity afforded. An example of this kind of Riba is the selling of gold and pearls in one transaction for a price that does not represent the market price. Another example is selling a kilogram of wheat for two kilograms or selling a unit of gold for two units, whether this has been specified in advance or because the buyer has faced some difficulties in returning the basic amount.

Reasons behind the prohibition of interest have been discussed by Abdul Rahman (2007) who reports that there are principally two rationales for the illegality of *Riba*. Firstly, interest or Riba allows for wealth to be accumulated by a particular sector of society, thereby increasing the wealth of the rich (lenders), and the poverty of the poor (borrowers) the end result being lenders becoming rich at the expense of the borrowers. Abdul Rahman also reports that dealing with interest within society makes the lender less concerned about the borrower's welfare, which lessens the sense of mutual sympathy in societies. Further, as the lender's receipt of interest or *Riba* is predetermined and definite, it is undoubtedly easier for the lender to gain income from *Riba* than undertaking hardship by involving in any economic activities, which will have great consequences on the economic and social development of mankind. Finally, it may be worth mentioning that according to Benamraoui (2008) Islamic principles excuse sellers for accepting more money if the deal of a commodity is accomplished during an economic growth.

2.4.2. Profits and Loss Sharing (PLS)

Derbel (2011) reports that conventional financial contract transfers all the risks related to an investment to one stakeholder through the predetermined rate of interest. On the

contrary, Islamic financial philosophy believes in profit and loss sharing (PLS) modes of finance presented in Mudarabah and Musharakah (explained later in this chapter) as an alternative to predetermined interest. Through this principal, the consideration of stakeholders in profits and losses sharing is legalised.

Dar and Presley (2001) establish PLS as a dominant subject in the theoretical literature of Islamic finance. Dar and Presley (2001), Čihák and Hesse (2008) and AL Manaseer (2009) report that the key characteristic of the PLS principle is the promotion of risk sharing between the funds' suppliers (investors) and the funds' user (entrepreneur).

On the contrary, under non-Islamic banking system, the fund provider is protected by a programmed rate of interest, whether the business achieves a profit or produces a loss. Benamraoui (2008) argues that PLS represent an alternative to loans at predetermined interest rates through shaping a distinctive partnership with the borrower.

According to PLS modes of finance, a sharing plan must be established at the signing of an agreement to specify the percentage of distribution of expected profit or loss. The rationale behind PLS mode of finance is clearly explained by Siddiqui (2001) who reports that normally, financial institutions gain extensive profit from trading with the accumulation of customer's deposits, however, these institutions do not share these profits with the depositors, although they are the owners of the funds. This unfairness can be averted if banks agree to accept PLS as a mode of finance and also allow a sizable amount of fund to borrowers on the same basis. If this mode of finance is adopted, it will bring prosperity to the society, as a great number of depositors will be receiving higher profits on their deposits.

In practice, PLS has been criticised for showing insufficiency. This has been explained by Dar and Presley (2001) who report the following difficulties facing the application of PLS mode of finance:

Firstly, when compared to self-financing owner-manager, the fund user (entrepreneurs) in PLS is encouraged to show a minimal profit or apply minimal effort in their endeavours, which can be problematic for this mode of finance.

Secondly, to get the best of PLS mode of finance, the contractual agreement requires a properly defined property rights, however in the majority of Muslim countries, property rights are neither well defined nor properly protected. Consequently, PLS contracts are considered to be less pleasant or even vulnerable if used.

Finally, equity financing has been regarded as impractical or sufficient for financing short-term projects because of its high degree of risk. This encourages Islamic banks to utilise other modes of finance or even adopt a markup financial policy in order to be assured a minimal degree of profits.

Abdul Rahman (2007) reports that most Islamic banks avert utilising PLS as a major basis for their investment because of the previous criticisms. As an alternative, they use other Islamic modes of finance based on "mark-ups" that are somehow related to predetermined interest lending but under the guidance of Islamic Sharia.

2.4.3. Prohibition of Activities with Elements of Gharar (Uncertainty)

According to Ibrahim *et al.,* (2012) and Derbel *et al.,* (2011), the concept of G*harar* refers to any business activity or trade in which the terms and conditions of the contracts are highly uncertain, unclear, vague or characterised by deception. The uncertainty in this situation covers nature, quality and price of products/services under contract and/or the specifications of the rights and obligations of the contracting parties. Generally, Gharar occurs when there is insufficient relevant information or any important information related to the commodity/service under a contract that can lead to ambiguity and exploitation or abuse by one of the contracting parties.

According to Ebrahim and Joo (2001), the exchange is prohibited only if its terms implicate deception based on the absence of knowledge related to the goods: that is, if the goods cannot be supplied by the seller or the goods are not well described in terms of type, quantity or quality. To avoid the case of Gharar, the quality and quantity of any goods to be delivered following the signing of the agreements must be well defined so that there is a reduced risk of deception.

Furthermore, it may be worth mentioning that Gharar is not applied if the change is not related to basic characteristics of the good. For example, any unexpected change in the

economy will not be considered Gharar and the legality of the transaction will be agreed by sharia. On the contrary, if the basic characteristic of the goods is majorly different from that agreed, Gharar is applied and the transaction is prohibited in Islam.

In non-Islamic banks, the definite profits on the bank's portfolio of loans are indefinite; however the bank obligates itself with predetermined rate of interest to depositors.

2.4.4. Prohibition of Maisir (Gambling Activities)

Gambling is referred to as Maisir in Arabic, which means any action that includes a deal between two or more parties, each of whom agrees to take a risk of loss; where this loss becomes the gain for the other party without assuming any risk or making proportionate efforts. AL Manaseer (2009) reports that the gain resulting from such a random speculation deal is considered immoral and prohibited in Islam, for the sake of preventing individual interest from been deviated from the positive employment of resource to acquiring and gathering wealth with no effort. Ibrahim (2009) argues that non-Islamic banks are criticized for undertaking activities that involve such kind of deal (speculation and conventional insurance).

2.4.5. Prohibition of the Production and Sale of Goods and Services that are prohibited in Islam

Ali and Farrukh (2013) report that to accomplish the ambition and purposes of an Islamic financial system, Islamic banking is expected not only to keep away from interest-based dealings prohibited in Islam but also from been thrown in unethical transactions which may lead to the society's or individuals' destruction or impairment. Contribution in such transactions is firmly prohibited in Islamic S*haria* as one of its main concerns to positively engage with the community in order to attain both economic and social growth and prosperity. Chong and Liu (2009) provides examples of these sort of activities by reporting that Islamic banking is not allowed to deal in a business that has anything to do with alcohol, pork, tobacco, armament, and prostitution.

2.4.6. Zakah

Zakah is an amount of money that every Muslim whose wealth surpasses a set limit is required to pay to the needy in the Islamic society

Unlike charity, Zakah is compulsory and its amount is defined by sharia. Samad (2004) defines Zakah as an obligatory religious sum or tax on the wealth of the rich payable to the needy. The rationale behind Zakah is to redistribute wealth to offer a fair standard of living for the poor.

Zakah is one of the five pillars of Islam; therefore, all Islamic banks are required to pay Zakah on their earned profits. In consequence, Islamic banks pay two taxes, Zakah, and corporate business tax, while non-Islamic banks only pay corporate business tax. Recently, the Islamic banking system developed a new service through which they are able to collect Zakah from eligible Muslims.

2.5. Islamic Banks' Sources of Funds

As in conventional banks, Islamic banks have two sources of funds; internal and external. The internal source is the shareholders' funds. External sources of funds consist of current accounts (demand deposits), savings accounts and investment deposits. Bashir (1984), Khan and Mirakhor (1990), Haron (1996a), Deehani (1999) and khan *et al*., (2007) explain both types of funds as follows:

2.5.1. Shareholders' Fund

Shareholders' fund (equity capital) is the single source of equity finance that an Islamic bank uses: this is acquired through the sale of common shares to the public. It enables their holders to have the sole control over the bank management. It also includes any reserves that have been accumulated over the years by the bank. Unlike conventional banks, Islamic banks do not issue preference shares as it requires predetermination of fixed dividends for their holders (AL Manaseer, 2009 and Deehani, 1999). Khan and Mirakhor (1990) report that equity capital in Islamic banks is a guarantee of the financial rights of depositors in current accounts in case of a business operation resulting in a loss.

2.5.2. Current Accounts demand deposit or transaction deposit

Current accounts in Islamic banks are akin to current accounts of conventional banks (Haron, 1996a). A customer who holds current accounts in Islamic banks is supposed to sign an agreement with the bank under which they give their clear endorsement to the bank to use their funds, with no return (Khan and Mirakhor, 1990 and Bashir, 1984). By

signing this agreement they gain the advantage of withdrawing their money on demand (Deehani, 1999). Khan and Mirakhor (1990) report that reliable amount of deposits in the current account is normally retained by the bank as cash reserves to meet customers' demands on their accounts. They also report that the bank uses the rest of this credit to generate profits by engaging in various activities. Any profits obtained from the deposits of the current accounts will be taken by the shareholders. In contrast, they emphasise that in the case of loss shareholders pay the customers of current accounts from their equity.

The reasoning behind the current accounts not receiving distributed profit is two folds; firstly, according to *Sharia* a share in profit is permitted only in case of risk sharing, which is not available under current account contract. Secondly, any customer's credit to current account is considered as loans from depositors to the bank. Therefore, the banks are committed to paying back only the initial amount, any increase over the principal amount will be seen as interest which is completely prohibited in Islamic *Sharia*.

2.5.3. Saving Accounts

Haron (1996a) and Khan *et al*., (2007) report that unlike savings account at conventional banks where depositors are automatically given a fixed predetermined interest on their deposit, Islamic banks accept saving deposits from customers under the condition of authorising the bank to utilise the deposit at the bank's own risk. However, according to Haron (1996a), the bank is expected to pay voluntary profit as it is totally at the judgment of the banks to decide how much to pay to reward the depositors. He also reports that when the contract between the depositor and the bank is based on *Mudarabah* modes of finance, returns is based on the pre-agreed profit/loss-sharing ratio.

2.5.4. Investment Accounts or Investment Deposit

Haron (1996a) reports that Islamic banks offer investment account facilities that are compatible with the fixed or time deposit facilities at traditional banks. However, with this type of deposit, there is no pre-determined interest rate attached to the deposits. Investment account considers the depositors as investors, who are entitled to receive profit through their investment deposits. Khan and Mirakhor (1990) and Deehani (1999) explain this source of fund by describing it as neither liability as current account deposit nor equity finance. As an alternative, it represents a distinctive source of fund but with

predetermined maturity date that gives the Islamic bank the right to group this money in one pool with its equity and invest it for their contributors with the promise of sharing future profit or loss at pre-agreed proportions. khan and Mirakhor (1990) and Deehani (1999) report that, as the investment accounts owner are not guaranteed a predetermined return, they are permitted to receive profit depending on the profitability of the accounting period.

Haron (1996) explains three types of investment account facilities available at Islamic banks. Firstly, time investment accounts (three months, six months, etc). Secondly, investment accounts based on notice, which means the depositor must give notice before withdrawal. Thirdly, specific investment accounts or deposits for particular sort of investment or projects. In this aspect, Bashir (1984) states that the predetermination of the profit-sharing ratio is normally reliant on the nature of the deposit account and whether the distribution of profits is decided to be on a long or short-term basis. He reports that the long-term deposit accounts are supposed to have a higher profit-sharing ratio as the bank consider these sorts of funds as more stable, which enable the bank to utilise this fund for long-term investments. Bashir (1984) also reports that all these types of investment account facilities are managed under Mudarabah modes of finance.

Khan and Mirakhor (1990) and Deehani (1999) report that as owners of investment accounts accept full risk of losing their deposits if the business operations result in a loss, investment deposits do not form a financial risk to the bank.

Depositors of investment account, whether their deposit is for the long or short period are allowed to withdraw their fund at any time taking into their consideration that their predetermined profit (or loss) sharing ratio will be affected accordingly. Therefore, they will need to keep their investment deposit for the minimally contracted period. Bashir (1984) reports that predetermined profit (or loss) sharing ratio would not pay/charge for a six-month deposit account if the depositor withdraws his or her deposit after five months. He argues that to reduce the liquidity risk associated with these feature Islamic banks require notice to be given before allowing the withdrawal.

Finally, it may be worth mentioning that under both internal and external source of fund Islamic banks use the deposits to offer finance through special Islamic modes (discussed in the next section), and either obtain a commission as a fee or receives a percentage of the expected profit as a reward or return for their efforts.The profit/loss sharing ratio between the bank and depositors is determined in the contract; however, the definite amount of return which will ultimately be paid to investors is not prearranged. As Islamic modes of finance are commonly used to finance trade in terms of commodities and services and to aid the actual production processes, the profit/loss sharing ratio is strictly related to the real economy's performance. Additionally, it is linked to the performance of each bank in terms of its management skills and choices of investment.

2.6. Islamic Banks' Uses of Funds or Islamic Banks Modes of Finance

According to the rules of conventional banks borrowers has to be responsible for all risk associated with project activity. Therefore, they pay this rate regardless of the profitability of the project that being funded; no matter if the project activities result in making a loss. Accordingly, conventional banks place great emphasis on the collateral or creditworthiness associated with the receiving of interest. In addition to that, in the case of bankruptcy, the bank has the right for the first claim on the value of the liquidated assets (Smith and Gierthy 2010).

On the contrary, as Islamic banks are forbidden from paying or receiving interest according to Sharia law, Islamic financial system utilise both Sharia law and previous experiences to form suitable and practicable modes of finance. Abdul Rahman (2007) reports that the practice of Islamic banks is governed by Islamic rules on transactions, known as "*Figh Al-Muamalat*", which utilise special Islamic Sharia arrangements for structuring the main outlines of Islamic modes of finance. According to these modes of finance, the profitability of the projects is considered to be the key determinant of financing, not the customers' credit merit and solvency or the securities and collaterals. This type of financing gives considerations to the economic morals and ethics that unite both material and spiritual qualities to demonstrate its system and accomplish its objectives (Ariff, 1988 and Dusuki and Abdullah, 2007).

Dusuki (2007) reports that this policy holds the motivation that encourages all individuals to contribute to the society's development. That aside, it will support economically

profitable projects that have both social and economic prosperity and settlement for the whole society. This will be seen in different signs such as creating additional job opportunities, increasing production and introducing new types of technology. He also reports that adopting policy which emphasises society moral values and needs does not conflict with the aim of profit maximization but it reveals the importance of favouring investments that reflect both the needs of the majority of the population (such as food provision, investing in education and health services) and entails a considerable rate of economic and social benefits (such as opening additional job opportunities and lessening district imbalances and migration to the main cities in search for improved services).

To adopt these comprehensive socio-economic policies, Islamic banks utilise Islamic financial instruments. These instruments have been explained by Haron (1996a) who report that Islamic modes of finance are classified into the following three groups:

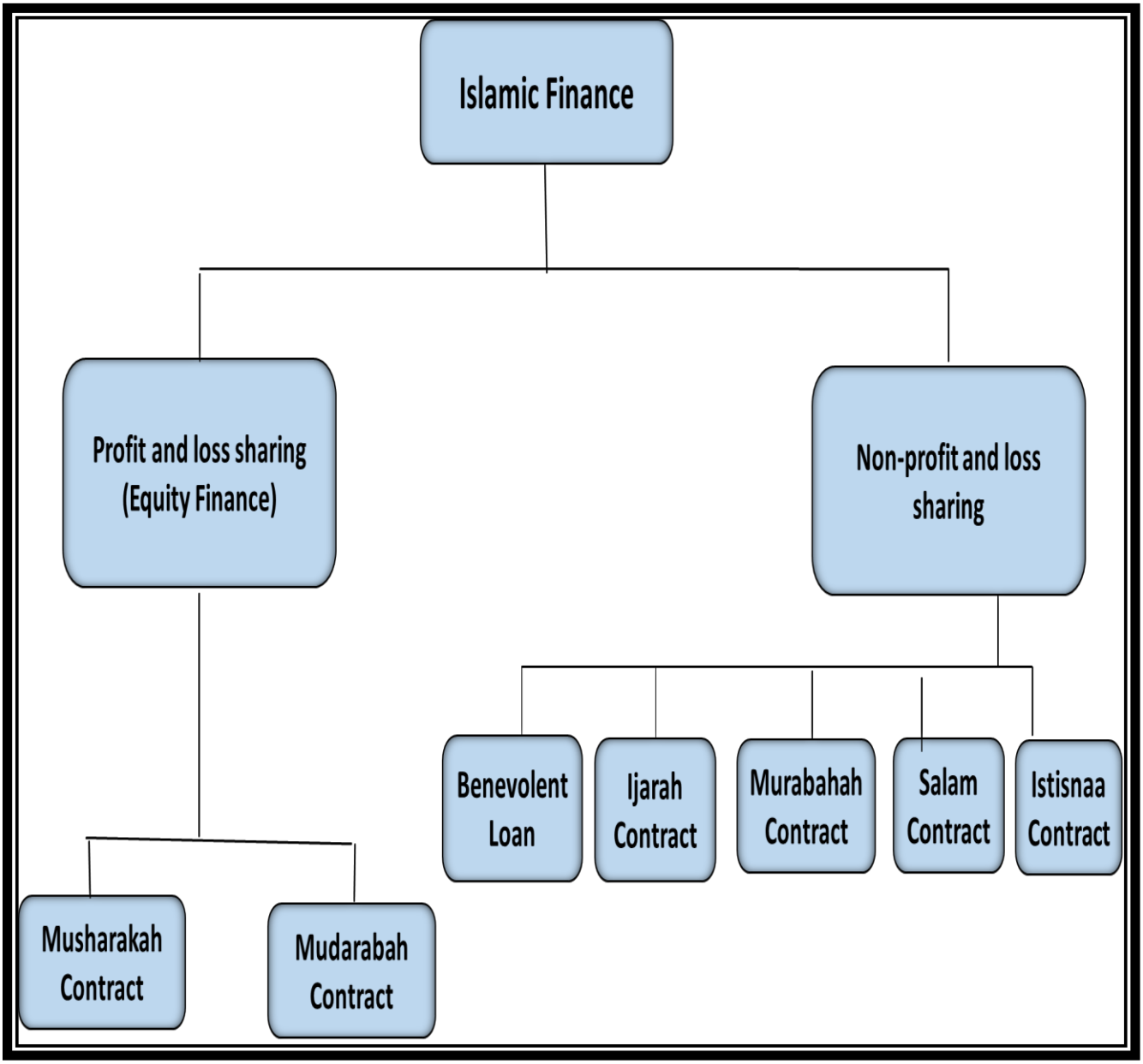
a. Modes that are founded on profit sharing PLS.

b. Modes that are founded on fixed charges non-PLS

c. Free of charge mode.

The modes of Mudarabah (trust-finance) and Musharaka (joint-venture) represent PLS modes of finance, whereas modes such as Murabaha (cost plus profit markup), Salam (advance purchase or sales contract) and Ijara (lease) represent the group of fixed charges or markup. Finally, the mode of Qard Hassan (benevolent loan) is the only mode of free of charge principle. The structure of the Islamic modes of finance is illustrated in figure 2.1.

Figure 2.1: Structure of Islamic Finance



Source: created by the author

Further details on these modes are discussed below.

2.6.1. Mudarabah (Trust-Finance)

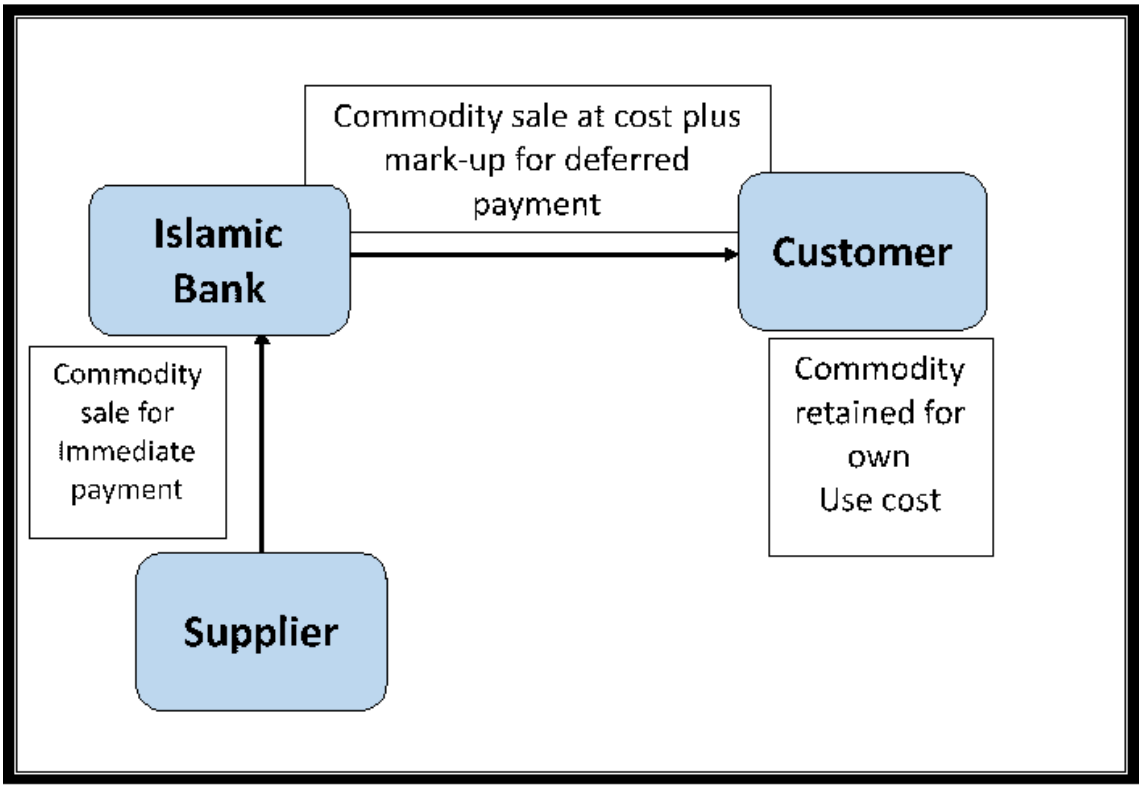
Shahinpoor (2009) defines Mudarabah as an agreement between two parties in which one party supply the funds and the other commit the entrepreneurial abilities such as labour and management duties. Siddiqui (2008) explained *Mudarabah* as a partnership contract but with no equity partnership. Further explanation for Modaraba was given by Aljifri

(2013) who reports that within this partnership, the lender does not interfere with the enterprise administration, however, he has the right to access and monitor work-related information.

Sarker (2000) reports that *Mudarabah* can be divided into restricted and unrestricted Mudarabah. He stated that within restricted *Mudarabah* the lender allows the entrepreneur to trade by his capital but according to certain conditions. These conditions are connected to the kind of product or service which is subject to the deal, the place of trading, the person with whom the entrepreneur should trade and the time of the trade. On the other hand, he explains unrestricted *Mudarabah* as the case where the lender applies no restrictions on the commodity, the place of trading, the person with whom the entrepreneur should trade and the time of the trade.

Shahinpoor (2009) reports that in *Mudarabah*, the financier (*Rabbul Almal*) is not allowed to call for collateral to lessen credit risk. However, according to *Mudarabah* agreement, he is entitled to clearly state predetermined percentage of the expected profit or loss according to the business outcomes. Therefore, profit cannot be claimed unless *Mudarabah* obtained profit. In the case of loss, the financier is not responsible for any losses if it is greater than his capital contribution. Additionally, Abdul Rahman (2007) reports that any losses resulted from this type of contract must be remunerated by future profits. Furthermore, according to Shahinpoor (2009), the entrepreneur is not liable for losses beyond his loss of time and efforts in attempting to administrate the enterprise unless it is clearly shown that the loss is due to his dereliction of commitment (mismanagement). Abdul Rahman (2007) establishes that after full settlement of *Mudarabah*, the enterprise is expected to be owned by the entrepreneur. The structure of the *Mudarabah* contract is illustrated in figure2.2.

Figure 2.2: the structure of Morabahah Contract



Source: created by the author

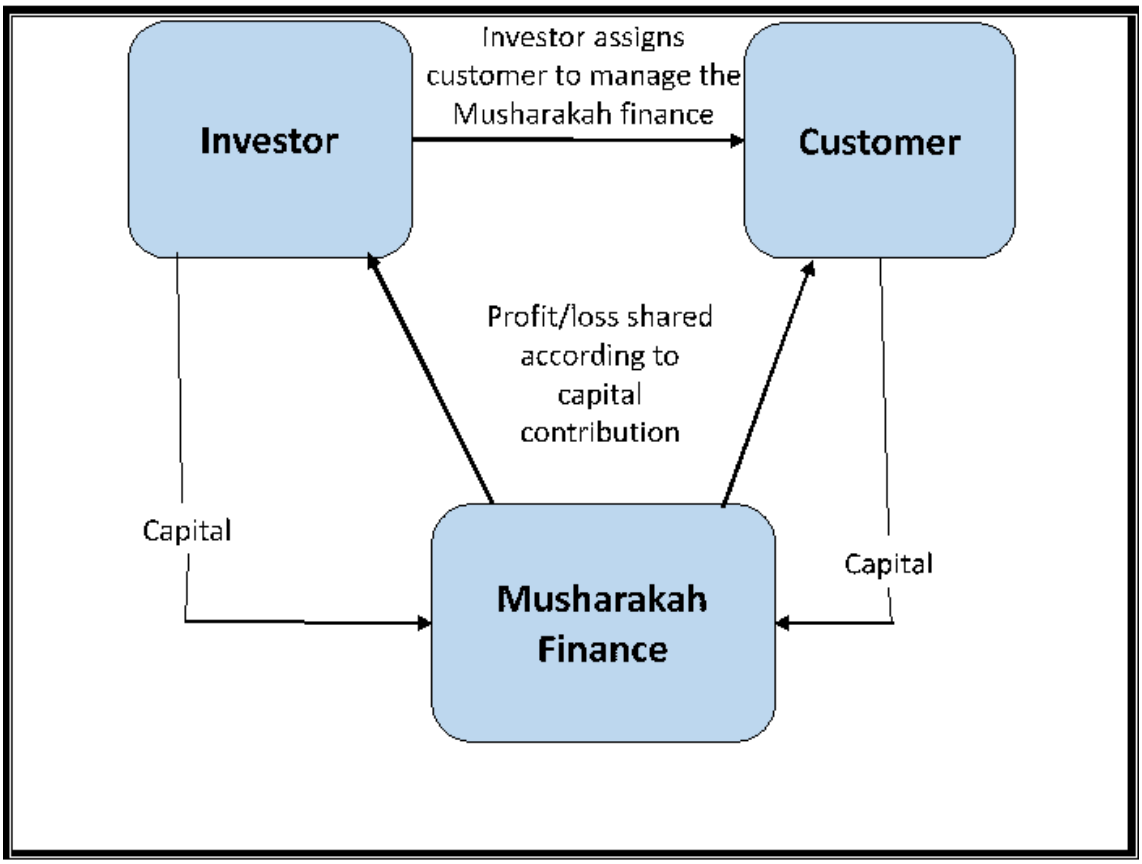
2.6.2. Musharakah (Joint venture)

Ibrahim *et al.*, (2012) define *Musharakah* as an equity-based agreement in which the bank and a business partner (entrepreneur) perform partnership to finance their business through taking an equity stake in the venture. According to the definition, both the Islamic bank and the customer has a stake in the equity capital. Rights of partners are based on each partner's share given to the investment. With regards to profit distribution in a *Musharakah* contract, Ibrahim *et al.*, (2012) report that if a business result in a profit, it will be distributed to all partners according to the predetermined ratio agreed upon in the contract. However, in the case of a loss, Siddiqui (2008) reports that loss will be distributed to the fund providers according to their equity participation proportion.

It is also common that *Musharakah* contract ends up with the transfer of the project ownership to the business partner. This normally happens through what is known as a diminishing partnership or *Musharakah Mutanaqisah*. Abdul Rahman (2007) reports that within the concept of *Musharakah Mutanaqisah* the capital sum reduces following each

payment made by the entrepreneur towards the capital.This will boost the total capital for the entrepreneur in anticipation of transferring the total ownership of the business to him. The repayment period is dependent upon the pre-agreed period. The structure of the Mosharakah contract is illustrated in figure 2.3.

Figure 2.3: Structure of Mosharakah contract



Source: created by the author

2.6.3 Morabahah (cost plus profit markup)

Siddiqui (2008) establishes Morabahah as one of the broadly employed mode of financing by the Islamic banks. Nevertheless, it is commonly implemented in short-term trade financing.

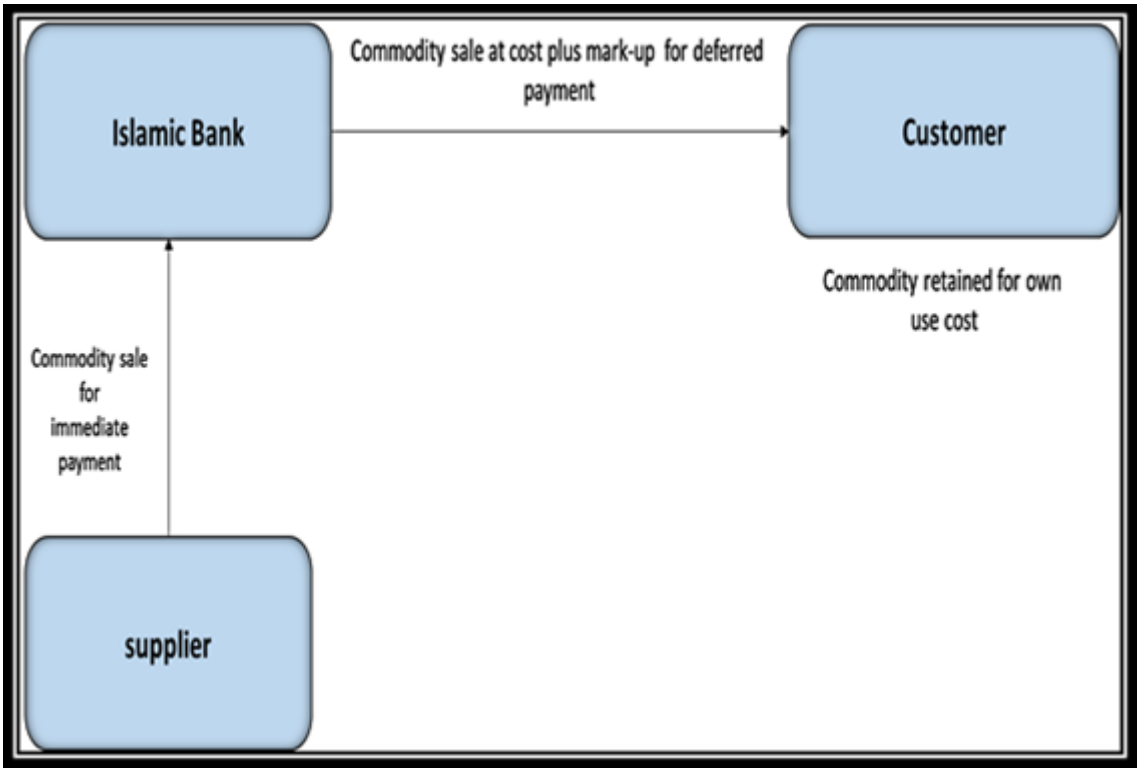
Haron (1996a) and Siddiqui (2008) explain that Morabahah is an agreement of three parties (the bank, the client and the original seller/supplier). Based on an obligatory prior promise to purchase contract signed initially between the bank and the client, the bank purchases the meant asset from the original seller. After acquiring the asset, the bank resells it to the customer after agreeing a predetermined resale price based on cost plus

markup price. Customer payment method and whether it should be paid in full upon maturity or by instalments will be specified in the agreement.

It may be worth mentioning that the entrepreneur has to repay all the debt under the contract to the bank regardless of losses and profits incurred by the entrepreneur following the cash conversion of goods. Abdul Rahman (2007) reports that the Islamic bank normally becomes the possessor of the commodity until settlement of its full price (cost plus markup) is made. He states that the benefits of *Morabahah* is widely recognizable, and entrepreneurs with a perfect reputation for settlement will be offered extra finance. As *Morabahah* is based on the markup or cost plus sale contract, it may come to mind that there is a sort of similarity between *Morabahah* and interest based loans provided by conventional banks. In other words, one can observe this markup sale agreement as an equivalent to predetermined interest contract used by non-Islamic banks as it seems that interest is being charged but is called a pre-agreed profit. However, this has been defended by Siddiqui (2008) and Ghannadian and Goswami (2004) who report that Islamic scholars have defended this idea by arguing that markups included in *Morabahah* are not interest, since the true owner of the goods is the bank, even if this possession is temporary. Therefore, *Morabahah* embodies a kind of trade agreement as it represents a resale contract. The recognition of trade and its associated profits is well known in the Islamic financial principles.

The structure of the Morabahah contract is illustrated in figure 2.4.

Figure 2.4: Structure of Morabahah Contract



Source: created by the author

2.6.4. Ijarah (leasing)

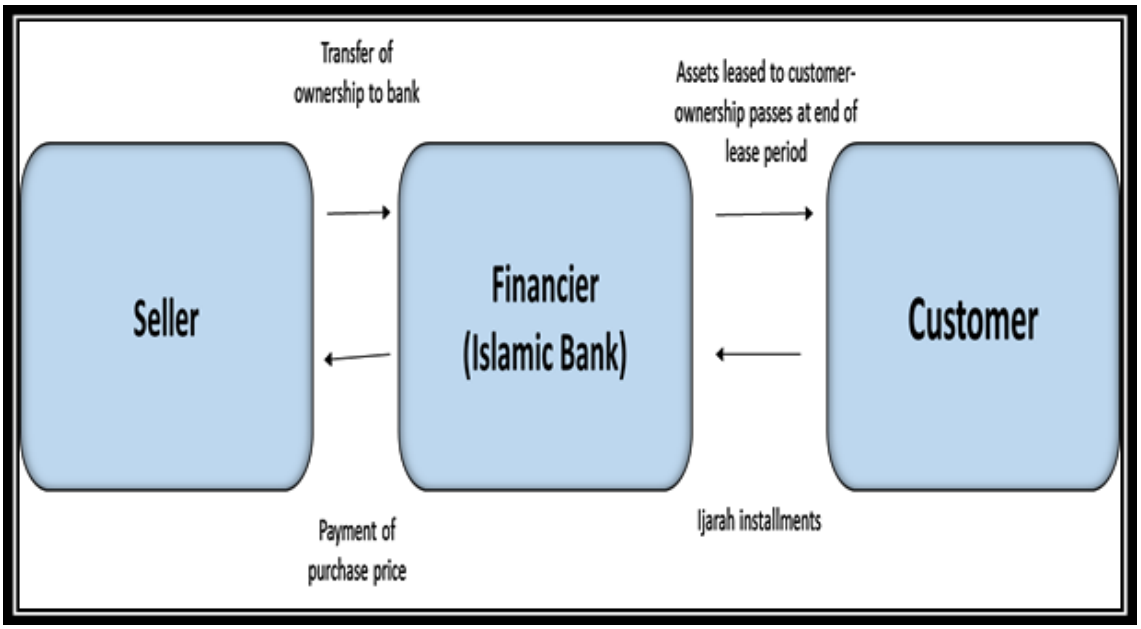
Ijarah is a long-term rental agreement, which is similar to leasing in conventional banks but subject to certain conditions that comply with Islamic *Shariah*. Within this mode of finance, the Islamic bank (the lessor) should purchase the assets (property, car, equipment etc.) before conducting the Ijarah contract. After acquiring the assets, the bank rents the assets for the client (the lessee) who pays the rent at regular intervals. The Islamic bank holds the accountability of monitoring the asset's usage. If it requires any maintenance – but not due to wear and tear- the Islamic bank calls for or employs a suitable maintenance unit for the purpose of maintenance. The bank is also accountable for the risks related to the asset. Meanwhile, the lessee will be accountable for safeguarding the asset (Abdul Rahman, 2007 and Amba and Almukharreq, 2013).

A developed type of *Ijarah* is *Ijarah Muntahia Bitamleek*. Ibrahim *et al.*, (2012) report that within this concept of *Ijarah* the possession of the assets will be transferred to the lessee at the end of the contract. Abdul Rahman (2007) reports that the asset ownership will be transferred to the lessee by one of three ways:

Firstly, the transferral occurs at the price that has already been fixed at the time of the contract. Secondly, the transferral occurs through progressive and gradual transferral of ownership during the period of the contract. Finally, the ownership can be transferred as a gift or token price, as the sale price has already been paid through the instalments.

The structure of the Ijarah contract is illustrated in figure 2.5.

Figure 2.5: Structure of Ijarah Contract



Source: created by the author

2.6.5. Salam (advance purchase or sales contract) or postponed delivery

Salam is a postponed delivery contract whereby delivery of commodity takes place at a specific future date in exchange of price that has been received in advanced (Hassan and Lewis 2007). Aljifri (2013) reports that Salam is a contract in which a bank agrees to buy a specified quantity of goods on a specified date in the future. Therefore, the bank makes an advance payment to the customer who uses this payment for financing the production of his project. According to Kaleem and Abdul Wajid (2009), Salam agreement supplies small needy farmers with the required capital and cost of operations to produce their crops.

Iqbal and Molyneux (2005), Siddiqui (2008), and AL Manaseer (2009) report that Salam contract supplies farmers with cash when it is needed, whether the cash is needed just

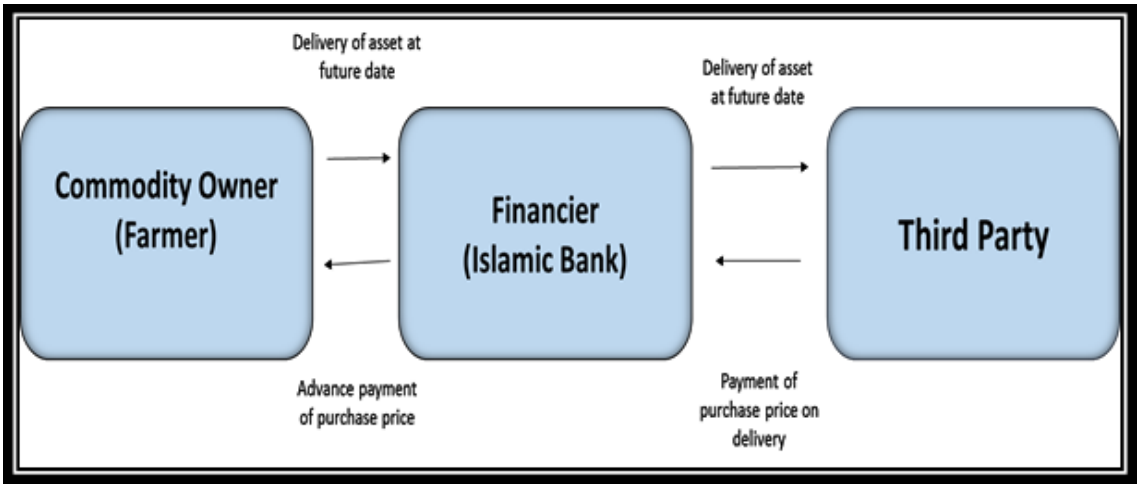
before harvesting or for fertilizing or even at the time of sowing. They also report that as the asset subject to Salam agreement is not in existence at the time of the contract, Shariah specifies strict rules to be adhered to protect the right of all parties. These rules cover specification of quality and quantity of the commodity, date and place of collection and all other aspects that help in settling the contract and protect both parties.

Salam contract is fully acceptable under modern banking, however, the only concern is that banks generally desire to deal in money rather than products. This problem can be solved through parallel Salam contracts in which the bank enters into two separate agreement through which it acts as an intermediary between the two parties, firstly with the farmer who sell the product and secondly with the buyer of the product.

It may be worth noting that the contracts with both parties should be entirely independent of one another (http://www.financialislam.com/salam.html).

Siddiqui (2008) report that Salam contract is favourable for the two parties as the seller benefit from receiving the money in advance while the buyer (the bank in this case) benefits from entering into a Salam contract because, usually, a Salam price is cheaper than a cash purchase which secures the bank against price fluctuations. However, the bank still bears the rare risk of a price deflation or a market crash when post Salam prices decrease to lower than the price of Salam contract prices. Iqbal and Molyneux (2005) and AL Manaseer (2009) report that the buyer can legally ask the seller for a collateral to secure his money and to reduce lending risk. The structure of the Salam contract is illustrated in figure 2.6.

Figure 2.6: Structure of Salam Contract



Source: created by the author

2.6.6. Istisnaa (commissioned manufacture)

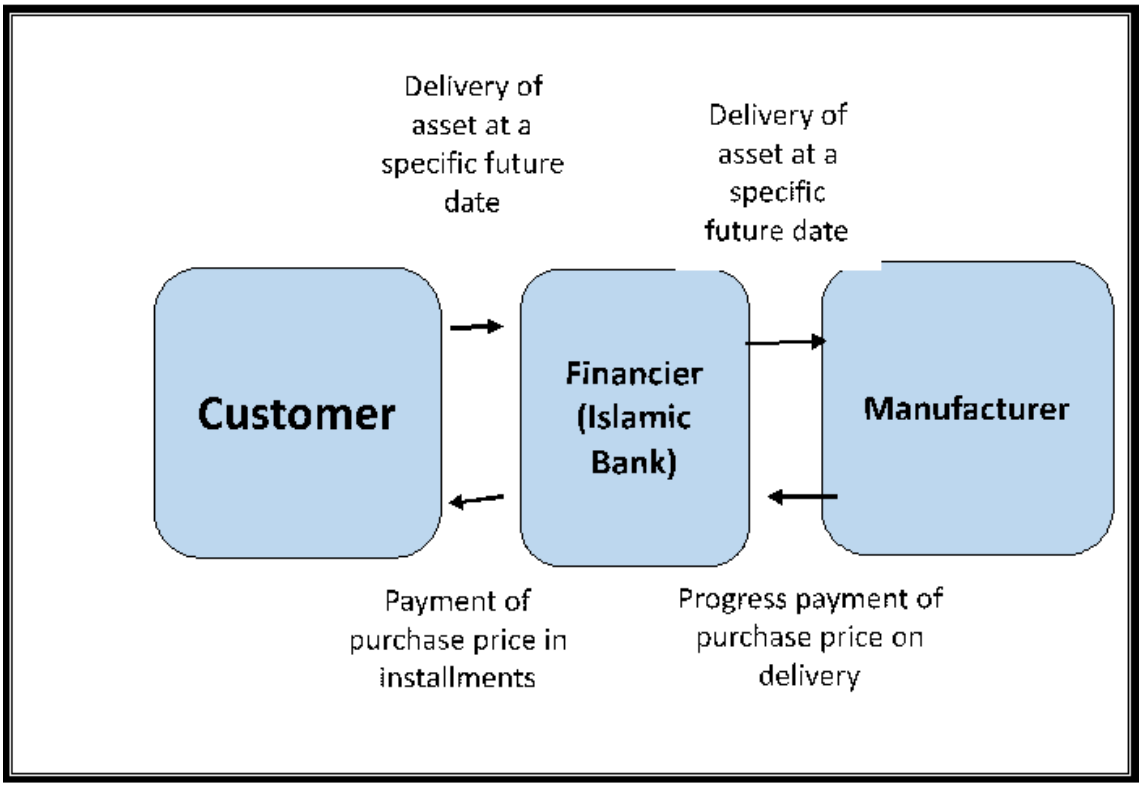
Referring to Ibrahim *et al.,* (2012) and Amba and Almukharreq (2013), *Istisnaa* is a concept of commissioned and manufacturing agreement that can be used in the finance of manufactured goods, construction, and infrastructure projects. Within this contract, one party agrees to undertake the task of producing a certain commodity and at a predetermined price and the promise of delivering it at a certain future date. Ibrahim *et al.,* (2009) define *Istisna* as an agreement for the sale of certain commodity to be manufactured within a certain completion period of time and delivered upon completion by the manufacturer to the customer. Further explanation for *Istisna* is given by Ibrahim *et al*., (2012) and Amba and Almukharreq (2013) who report that *Istisna* is often utilised to finance long-term plans. Within this mode of finance, the bank represents the service provider (contractor) who agrees to manufacture or build a certain asset for the customer at a predetermined price and predetermined description of the depicted product and within a specified period of time. The purchase price is payable by the customer in the future by agreed instalments. According to Ibrahim *et al.,* (2012) *Istisna* often involves two contracts; the first one represents the customer agreement to buy the asset from the Islamic bank upon completion. The second contract is between the bank and the service provider for manufacturing the same product with another contractor. In this contract the bank sets another specific predetermined price in a way that enables it to generate a reasonable

profit, bearing in mind that the bank holds the responsibility for the construction to match the contracted standards and specification.

It may worth mentioning that both *Salam* and *Istisna* represent future contracts in which the purchaser and seller agree to a specific price, quality, quantity and delivery date. However, *Salam* is prearranged for commodities, whilst *Istisna* is for manufactured goods.

The structure of the Istisnaa contract is illustrated in figure 2.7 below.

Figure 2.7: Structure of Istisnaa Contract



Source: created by the author

2.6.7. Qardh Hasan (benevolent or interest-free loan)

Qardh Hasan represents another case of Islamic finance that deals on a zero return basis. In other words, the borrower repays the same amount they initially borrowed from the bank without any interest payments (interest-free loans). The borrower usually has to refund the loan within a predetermined period of time; the repayment terms are normally instalments that are clearly specified in the agreement (Abdul Rahman, 2007 and Khan *et*

al., 2007). Additionally, Abdul Rahman (2007) reports that according to this mode of finance the bank is permitted to charge for loan administration. He also reports that an entrepreneur who has good potentials to make full repayment and is in need of instant cash are more likely to be chosen for this kind of interest-free loan. He also reports that as the Islamic bank will bear the credit risk, they need to select the accurate technique to ensure that the instalments will be received as agreed. Shahinpoor, (2009) argues that Qardh Hasan is often given to charitable institutions or people with an unexpected need for funds (such as natural disaster), therefore, Qardh Hasan is expected to give both financial and moral support for the borrower.

After discussing the uses of funds in Islamic banking it is appropriate to know that the above-mentioned set of modes of finance represent neither all the potential contracts that Islamic law permits nor are those used in practice. Generally, there is a good opportunity for innovating in the formation of new types of contracts, as long as there is no prearranged interest charge or other contradictions with principles of an Islamic Financial system.

The following table which is adapted from Haron (1976a), Ariff (1988), Bashir (1999), Dar and Presley (2001), Samad (2004), (Dusuki and Abdullah (2007), Cihák and Hesse (2008), Smith and Gierthy (2010), Ika and Abdullah (2011) and Ibrahim *et al.,* (2012) shows comparison between conventional finance and Islamic finance. It also summarises the unique features of Islamic finance.

Table 2.1. Comparison of Some of the Features of Conventional and Islamic Finance

	Conventional Banking Finance	**Islamic Banking Finance**
1	Predetermined rate of interest is certain for the investor.	Supports risk sharing between the fund providers (investor) and fund users (entrepreneurs).
2	It takes aim at profit maximization without any restraint.	Profit maximisation is restrained by Islamic law requirements.
3	The basic and most important function of conventional banks is to lend money and get it back with compounding interest.	The basic and most important function of Islamic banks is to participate in the partnership business.
4	Collateral or security provided by the customer is the main determinant of financing.	The projects profitability is the main determinant of financing.
5	In the case of defaulters additional penalty and compounded interest can be applied.	At the agreement no condition to charge any additional money to the defaulter. Additionally, according to the bank's judgment discount is given for early settlement.
6	The relation between the conventional bank and its clients is creditor and debtors relationship.	The relation between the Islamic bank and its clients is investors, partners and buyer and seller.
7	The conventional banks grant greater emphasis on the credit worthiness of the customers.	The Islamic banks grant greater emphasis to the viability and the benefit of the financed projects.
8	It often happens that the bank's own interest becomes prominent and overcomes the customer's interest.	It gives great emphasis to public interest.
9	It does not contend with *Zaka*h	In addition to that Islamic banks is obligated to pay annual *Zaka*h, recently Islamic banking system has developed new service of being a *Zakah* Collection Centre.

10	All kinds of deposits are assured.	Only deposits for current and saving accounts can be assured. Nevertheless, if the account is based on the *Murdarabah* concept, the money still cannot be assured and the client in the case of loss has to share according to the contract conditions and proportions.

Source: created by the author

2.7. Summary

This chapter describes the rationale of Islamic banking system, which lays in profit maximisation that is consistent with Sharia law and principles. It also focuses on the distinctive characteristic of the Islamic banks. The next chapter gives a general idea about the history of Sudanese Islamic Banks and the environment in which they operate.

Chapter Three

The Sudanese Economy and Banking Industry

3.1. Introduction

As the subject of this research is to assess the financial performance of Sudanese Islamic banks, a general overview of the Sudanese economy and the banking environment is given in this chapter.

This chapter sheds light on the economic environment in which the Sudanese Islamic Banking industry operates, their development and performance. This chapter discusses the major characteristics of the Sudanese economy as well as the main features of the evolution of these banks and their performance indicators.

3.2. Overview of Sudan

Sudan is located in the northeastern part of the African continent. The country encompasses an area of 695,000 sqm (it was the largest country in Africa until 2011, when the south of Sudan was detached from the north). Sudan is surrounded by the red sea on the northeastern side and also borders seven African countries, Egypt to the north, Eritrea, and Ethiopia to the east and southeast, South Sudan at the southern border and the Central African Republic on the south-western border. The western border is shared with Chad and its north-western border with Libya. Sudan terrains are generally flat with distributed mountains in the east and west. Khartoum, the capital city, is located on the concourse of the Blue and White Nile Rivers. Its climate is desert and savanna in the north and central areas and tropical in the south. The country is divided administratively into 15 States. Sudan's population is one of the most multicultural in Africa, with Arab and sub-Saharan Africa constituting the major cultures. The total population in July 2011 was 33,419,625 with an annual population growth rate of 2.8% in 2011. The average literacy rate in Sudan was 69% in 2011 and a life expectancy 42-55 years of age. The official Language is Arabic and Islam was declared as the official State religion in 1983, when the government, under the second military regime of president Numeiri, started the application of Sharia laws. 80% of the country’s workforce are in the agricultural sector,

13% in the government sector and 7% in the industry and commerce sectors (Countries of the World: Republic of the Sudan, Jan2012).

The Legal system in Sudan is founded on both the English common law and sharia law, as of January 1991, as imposed by the government then (Ahmad, 2007).

Sudan has witnessed a civil war for more than twenty-two years, which has decelerated Sudan's economic and political development and led to a massive internal displacement of its people. The war ended with the secession of northern Sudan from southern Sudan after the South voted in a referendum in January 2011 and officially declared an independent republic on July 2011. However, several violent conflicts have emerged by the end of 2011 in Darfur and in the three border states of Abyei, Southern Kordofan, and the Blue Nile (Khalfalla, 2011).

3.2.1. Structure of the economy

3.2.1.1. Agriculture

Sudan's economy has always been mostly agricultural, with its massive arable lands and ample running water from rivers and seasonal rains that irrigate enormous numbers of agricultural projects in various parts of the country. The agricultural sector contributes 48% of the GDP and provides employment to 80% of the population. It also supplies Sudan with around 85% of its export earnings (the main primary agricultural export goods are cotton, sorghum, peanuts, Arabic gum, oilseeds, and livestock) as well as contributing raw materials to the industrial sector, which in turn provides about 17% of the GDP for the country (Hussein, 2003).

3.2.1.2. Industry

Industrial activities in Sudan are all of a basic nature, with the manufacturing of cotton, leather, and wooden products being the main types. However, its contribution has increased to around 43% of GDP in response to the recent development in the oil industry. The major industrial products are textiles, leather, and cement. The main industries are food processing industries such as sugar and flour, and oil industries.

3.2.1.3. Petroleum

Sudan's oil production started in the late 1990s and has grown rapidly, giving the industrial sector a good boost. In 2010, oil production accounted for over 90% of Sudan's foreign exchange earnings and 36% of government revenues (before South Sudan's secession in July 2011). After losing the main oil field that was located in Southern Sudan, the remaining production in Sudan barely covers domestic use. However, new fields have been discovered in Kosti, in north Sudan (Global Energy Market Research: Sudan, Mar2013).

3.2.2. Selected Macroeconomic and Financial Indicators of Sudanese Economy since 2005

A general overview of Sudan's economic growth is pertinent, given that it influences the banking performance, the theme of this research. Table 3.1 contains the performance of the macroeconomic indicators over the entire period of study.

Between 2005 and 2010, the GDP showed unstable movement ranging between 5.6 and 9.9, reaching its maximum in 2006. However, it dropped down to 1.4 and 1.9 in 2011 and 2012 respectively, which could be interpreted to be because of the loss of the oil resources that was ceded to the southern Sudan. Nonetheless, GDP increased in 2013 to 3.6, indicating that the government has started to cope with the country's new situation.

The table also shows that although inflation increased from 8.4 in 2005 to 18.1 in 2011, a marked increase is observed between 2012 and 2013 as the rate reached 44.1 and 42 respectively. This could also be related to the secession of southern Sudan. The table also shows the price of Sudanese pound against the American dollar during the Study period.

Table 3.1. Selected Macroeconomic Indicators of Sudan, 2005-2013

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Growth Domestic Product %	5.6	9.9	8.1	7.8	6.1	5.2	1.9	1.4	3.6
Inflation Head line annual average ” %	8.4	7.3	8.1	14.3	11.2	13.1	18.1	44.1	42
Exchange Rate of SDG Against US Dollar: Annual Average	2.43	2.17	2.01	2.09	2.32	2.09	2.31	5.7	4.4
Industrial Sector Contribution In The GDP %	22.0	23.7	29.2	29.2	23.9	21.1	23.1	20.1	21.2
Services Sector Contribution In The GDP %	44.8	44.7	41.9	41.5	45.0	47.7	48	48.4	48

Source: Bank of Sudan’s annual reports 2005-2013

3.3. Sudanese Banking Industry: History and current situation

Distinct from many other African and Arab systems, the Sudanese banking system has gone through several changes since the independence of the country in 1956. These alterations are mainly due to frequent changes in the political regime that have reflected on the economic and financial policies taken to follow the ideological beliefs approved by each political system. The development of the Sudanese Banking industry can be divided into six major phases. The following section explains these stages and the major events that accompanied the development.

3.3.1. The Banking Industry 1956-1983 (Post Independence and Nationalisation)

3. 3.1.1. Post-Independence Period: 1956-1969

After independence, the traditional banking system that was introduced when Sudan was still part of the British Colony continued to operate. All banks at that time were part of the foreign institutions and there were neither a central bank nor local currency (Abdel Mohsin, 2005). These financial institutions that were all branches of foreign banks include the National Bank of Egypt, Banque Misr, Barclays DCO, the Ottoman Bank and Credit Lyonnais. During this period of time, the banking sector was fully managed by

Barclays Bank. The year 1956 witnessed the establishment of the first national bank in Sudan (Sudan Commercial Bank) and a branch of the Arab Bank (Jordan). In 1957, the branches of foreign banks were unwilling to assist in agriculture because of the failure of the cotton season at the time, therefore, the Ministry of Finance decided to establish an agricultural specialized bank (the Agricultural Bank of Sudan) that started its operations in 1959.

After the independence, there was a need for a Central Bank to replace the National Bank of Egypt that opened in Khartoum in 1901 and used to operate as the semi-official central bank; it assisted in serving as the fiscal agent and lender of last resort for other commercial banks as well as operating as a commercial bank (Bank of Sudan, 2006). However, establishing a Central Bank to formulate the country's monetary and financial policies, and to cope with new policies became an essential requirement after the independence. Bank of Sudan commenced its roles in February 1960 and is one of the first operational central banking institutions in Africa. The main objectives of the Bank are to issue currency of all types (coin and paper), conduct monetary and financing policies, organize and monitor banking business and strive to achieve economic stability as the bank of the government (Bank of Sudan, 2006).

In 1958, the Ethiopian Commercial Bank opened a branch in Khartoum as an initiative of good relations between the countries; the bank was renamed as El-Neilein Bank after the Sudanese government took over 60% of its capital. During this period of time, the bank of Sudan encouraged the formation of specialised banks by opening two specialized banks, the Industrial Bank of Sudan in 1961 and the Real Estates Bank in 1967. In addition, in 1969, the National and Grindleys bank was founded and started taking over the assets of the Ottoman Bank (Ahmed, 2008).

In conclusion, it may be worth mentioning that fourteen years after independence, the structure of the Sudanese banking system included the Central Bank, six branches of foreign banks, three specialised banks, one national bank and one mixed national and foreign bank. It may also be worth mentioning that the period 1956-1996 witnessed three political regimes, the first democracy period 1956 -1958, the first military regime 1958-1964 and the second democracy period 1964 -1996, each of which added its own fingerprints on the development of the Sudanese banking system (Ahmaad , 2007).

3.3.1.2. Period of Nationalisation: 1970-1975

In 1969, Nimeiri, president of Sudan between 1969 and 1985, ended the second democracy government with a famous military coup and started the second military regime. The new regime adopted nationalisation policy through which it mainly aimed to increase income from exports, develop banking services in rural areas to encourage competition between banks and attract the savings of Sudanese people working abroad. It also aimed to terminate the demonstration of foreign capital over the national economy. To attain these aims, the regime, in 1970, declared the nationalisation of all banks including foreign banks, foreign firms, and all famous Sudanese business families. The nationalisation included Sudan Commercial Bank (the only national bank at that time). All banks came under direct government control. According to the new legislations, Barclays DCO became State Bank for Foreign Trade, National and Grindleys became Omderman National Bank, The Ethiopian Commercial Bank became Juba Commercial Bank, The Arab Bank became Red Sea Commercial Bank and Banque Misr became Peoples' Cooperative Bank. El-Neilein Bank, Sudan Commercial Bank, and the three specialized banks continued their activities under the same names. By this time, the Central Bank of Sudan had completely absorbed all the responsibilities of the National Bank of Egypt (Bank of Sudan, 1990-2005).

In 1973, some banks changed their names to cope with the new regulations of the nationalisation. Accordingly, State Bank for Foreign Trade became Bank of Khartoum, El-Nilein Bank combined with Red Sea Commercial Bank, Omderman National Bank combined with Juba Commercial Bank for Juba Omderman Bank (was renamed Unity Bank in 1975). Other banks, Sudan Commercial Bank, Peoples' Cooperative Bank, Agricultural Bank of Sudan, Industrial Bank of Sudan and Real Estates Bank maintained their names. The period of nationalisation also witnessed the establishment of Sudanese Savings Bank in 1973 (Ahmaad, 2007).

In 1975, eight private foreign banks were allowed to operate in Sudan again, alongside with the nationalised banks. Nevertheless, these banks were not allowed to deal with all Sudanese people as at that time: the policy allowed these banks to only open accounts for Sudanese nationals working abroad and import-export agents. These foreign banks

included the bank of Oman, the Arab Emirates Bank, Abu Dhabi National bank and five other banks (Abdel Mohsin, 2005).

3.3.2. The Emergence of Islamic Banking: the First Islamization Period

The emergence of Islamic banks in Sudan was an extension to the foundation of the first Islamic Bank (Savings bank), in the neighbouring country Egypt in 1963. It was also an extension of the same developing movement in the Arab region, which has witnessed the Middle East oil boom and the enormous accumulation of petrodollar surpluses, accompanied by people's wishes to invest their monies in accordance with their religion's teachings. Accordingly, the existence of Islamic banks developed into a reality in the Gulf countries. The first Islamic bank was the Dubai Islamic bank (1975) followed by the Islamic commercial bank of Abu Dhabi (1977). This was soon followed by the foundation of a whole group of Faisal Islamic banks in various Muslim countries. Sudan was not far from this development as Faisal Islamic bank of Sudan was established in 1977 (Abdel Mohsin, 2005).

The foundation of Faisal Islamic bank in Sudan can be seen as the first step towards the Islamisation of the Sudanese banking system. The portion of Faisal Islamic bank's shares was divided between Saudis Sudanese and other Muslims in the ratio of 4:4:2 respectively. The step was welcomed by a great endorsement from both the Sudanese government and citizens who were uncomfortable using interest-based traditional banks. This was undoubtedly ascertained by the dramatic growth in the bank's capital that increased from 0.6 to 2m Sudanese dinars in less than four years. This growth represented 17% of the total paid up capital of eighteen private commercial banks and 30% of the total paid up capital of national banks.

The success of the Faisal Islamic bank in this limited period encouraged the government to establish other Islamic banks. Al Tandamun Islamic bank was established in 1980, the Sudanese Islamic bank and the Islamic Cooperative Development bank were established in 1982, Albaraka Bank opened in 1983 followed by the Islamic bank of western Sudan. The five banks were able to attract more depositors; therefore, more branches were established over different Sudanese regions.

The success of these Islamic Banks encouraged the government to convert the entire financial system into an interest-free system, following the same policy used in Iran and Pakistan (Haron, 1997 and Abdel Mohsin, 2005).

Another strong boost to this directional conversion to an Islamic banking system came when the Sudanese government decided in September 1983 to adopt Islamic sharia as the main source of law for the country. In 1984, the Civil Transactions Act banned the use of interest in the whole financial system, and the banking industry was no exception. Accordingly, termination of all interest-based bank activities and a full Islamisation of the Sudanese Banking system was completed (Khalid, 2007). Consequently, conventional banks operational in Sudan, whether they are national or foreign, were demanded to operate on the basis of the interest-free banking system (Abdel Mohsin, 2005). Banks were required to make activities compatible with the new requirement from the first of July 1984. The Central banks allowed the banks only a few months to complete the conversion, which made it difficult for them to be prepared supportive pre-studies or consulting religious committee to get guidelines for the sudden shift to the Islamic banking system (Kaalid, 2007). It has also reported that Central Bank has applied no supervisory instruments on the application of the new the regulations (Ahmaad, 2007).

3.3.3. Post Islamization Period: 1985-1989

The year 1985 witnessed the start of famous Sudanese revolt, which ended the sixteen years of the second military regime and started the third democracy period. The application of Islamic Sharia was criticised by some of the political parties that were very opposed to the idea of the adoption of Islamic Sharia in 1983. During this period of time, banks were allowed to choose between interest-free or interest-based financing formulas. Accordingly, many of the traditional banks chose to snap back to their conventional routine (Bashir, 1999).

This period of time also witnessed the establishment of three Sudanese banks, the Sudanese-Saudi Bank 1986, National Workers Bank (1988) and Al-Shamal Islamic Bank (1989) (Ali, 2001). It may be worth mentioning that some of these banks were established based on ethnicity and professional basis. For example, sponsors from Northern Sudan established AI-Shamal Islamic Bank in 1990 jointly with citizens working abroad from the north and some Arab businessmen. Similarly, businessmen and citizens from Western

Sudan developed the western province, an Islamic Bank for Western Sudan. On the other hand, the National Workers Bank was initiated by the Sudan Workers Union. Afterwards, Ivory Bank was established as a bank for the South (Ahmaad, 2007).

3.3.4. The Second Islamization Period: 1989-2005

In June 1989, the third military government regime took over, backed up by the National Islamic Front Party (NIF). The regime eliminated the choice given to banks of being an interest-free or an interest-based financing system. A decision was made to Islamise all the banking system in the same year (Ali, 2001). In 1990, the government started the application of the Islamic Sharia in the banking sector by introducing new Banking Regulation Law of 1991 that replaced the Company Law of 1925.The new law established that no banking law or practice should contradict with Shariah law.

The year 1991 witnessed the privatization of the Sudan Commercial Bank, which came under the ownership of the Farmers' Bank for Rural Development, as a holding company. In the same year, a new law was introduced to give the bank of Sudan the right to supervise and organise the banking sector and other financial institutions in Sudan. In the same year, the Central Bank of Sudan issued some new regulations that encouraged the opening of new commercial banks branches. In 1992, another set of rules were established and they allowed the central bank to apply administrative and financial penalty policies for banking irregularities (Bank of Sudan, 1990-2005).

In August 1992 and for the first time in Sudan's modern history a Securities Market was established with the aim of enhancing resources development, however, it started trading only in January 1995 (Ahmad, 2007).

In March 1993, further rules were issued by the central Bank to control the Murabahah mode of finance, aiming to purify the banking industry from any traces of usury that remained from the old conventional banking system. These rules specified the legal requirements of Murabahah contracts (Ahmad, 2007).

The central bank also established its own Sharia Board with the main aim of deepening the Islamization of the banking system, the issuance of religious edict and guidance on how to solve problems on Sharia basis and teach and train banks' staff on Islamic methods

and formula. Different commercial banks followed the same step taken by the central bank by establishing their own Sharia Supervisory committee with the main aim of ensuring the purification of their transactions from any traces of usury (Bank of Sudan, 1990-2005).

The year 1993 also witnessed the foundations of three more banks; Omderman National Bank (which is known by its strong relation with the military regime), Animal Resources Bank, which aims to develop and promote the animal resources of the country and AI Safa Credit Bank (Bank of Sudan, 1990- 2005). This year also witnessed the merging, renaming, and liquidation of some banks. Unity Bank and National Export-Import Bank were merged into Bank of Khartoum and renamed Bank of Khartoum Group. Also, the Industrial Bank of Sudan and El-Neilein Bank were merged and renamed as El-Neilein Industrial Development Bank Group. Oman Bank Ltd was renamed as Al Mashriq Bank. The Middle East Bank and Bank of Credit and commerce international were liquidated. (Bank of Sudan, 1990-2005).

It may be worth mentioning that in 1994, Sudanese Banks were required to rearrange their financial structure to comply with the recommendations of capital efficiency, as specified by the Basle Committee, within three years, starting in the same year, in order to reorganize these banks.

In the year 1995, a new bank, supported by the government, named Ivory, was established, with the main objective of financing human development in the southern regions of Sudan (Bank of Sudan, 1990-2005). During 1996-1999, the Sudanese Savings Bank was transformed to the Savings and Social Development Bank. Citibank was closed and Nima Bank liquidated in 1999 (Bank of Sudan, 1990-2005).

3.3.5. The Dual Banking System: 2005-2011

In 2006, the peace agreement was signed between the Sudanese government and the Sudan People's Liberation Movement (SPLM), a representative for south Sudan. According to the agreement, the regulations of Central Bank of Sudan were restructured, so as to introduce two sets of banking systems in Sudan. The duality of the banking system was established in 2006, as a result, conventional banks were allowed to operate in the Sothern part of Sudan.

It also required the establishment of the Bank of Southern Sudan in the southern part of the country, which was managed by a deputy governor of Central Bank of Sudan. The aim was to organise and manage the conventional part of the system in applying the monetary policy adopted by the Central Bank in the north of the country.

As Banks of Sudan has already had the experience of managing and regulating a dual banking system in the past, this situation did not present any serious challenge. In reality, in countries such as Malaysia, Bahrain, the United Arab Emirates and Saudi Arabia their Islamic banks operate side by side with conventional banks in a dual banking system. In light of these countries experience, the dual banking systems have not been a cause or presented any serious banking management problems (Ahmaad, 2007).

The year 2006 witnessed the establishment of joint ownership banks, either between the Sudanese government and the neighbouring countries (such as Aljazeera Sudanese Jordanian Bank and Sudanese Egyptian Bank) or Sudanese individuals and institutions and foreign individuals and institutions such as United Capital Bank (Kuwait, Lebanon, and Egypt). El-Neilein Bank was sold to Alsalam Bank (United Arab Emirate Investments) in the same year (Bank of Sudan, 2006).

3.3.6. The Islamic Banking System: 2011 and After

A referendum took place in Southern Sudan in January 2011 on whether the region should continue as a part of Sudan or become independent. 98.83% voted in favour of independence, which took place in June of the same year. The separation was a painful blow to the Sudanese economy, especially since three-quarters of the daily oil production is located in south Sudan. Consequently, GDP dropped from 5.2 in 2010 to 1.4 in 2012 and inflation increased from 13.1% in 2010 to 44.1% in 2013 (The United States Institute of Peace, 2012).

With respect to the banking industry after the separation of southern Sudan, the country returned to a single Islamic banking system. It may be worth mentioning that this did not have a big impact on the performance of Sudanese Islamic Banks, as Islamic Banks were allowed to operate only in the north and conventional banks in the southern part of the country (Bank of Sudan, 2012).

The years after the secession of southern Sudan witnessed the foundation of Abu Dhabi Islamic Bank in 2012 and Qatar Islamic Bank in 2013, which are foreign banks, and Alroaad Bank for Development and Investment in 2013, which is a national bank established by Sudanese residing in the United Arab Emirates, Yemen, and Britain (Bank of Sudan, 2014).

3.4. Organisational Structure of Sudanese Islamic Banks

3.4.1. Board of Director

As with any board of directors, the board of a Sudanese Islamic Bank is a group of individuals that are headed by a board chairman, either elected or chosen by the bank shareholders to be accountable for the organization's performance in their stead. They are also accountable for establishing broad policies and objectives, selecting, assigning, supporting and reviewing the performance of the chief executive. The size of the board of Sudanese banks ranges from 5 to 16 people, averaging 10.

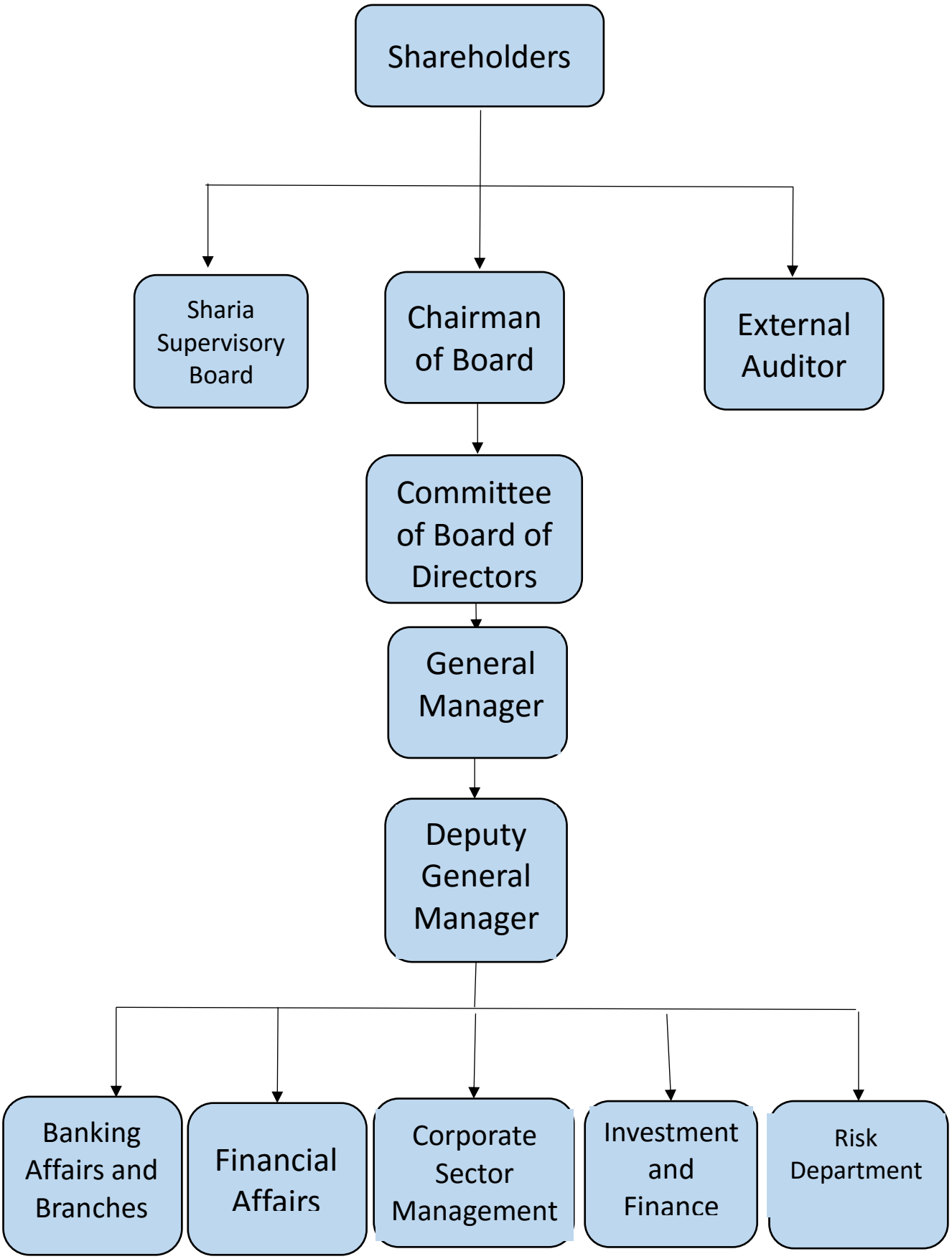
3.4.2. Executive Management

Executive management consists of a team of individuals who are appointed by the board of directors at the highest level of management to manage the day-to-day responsibilities of banks. This management level consists of the bank’s general managers and functional executives of financial affairs, banking affairs, risk department, investment and affairs and corporate sector management. The executive management is responsible for authorising the funding of banks resources.

The organisational structure of Sudanese Islamic banks is illustrated in figure 3.1.

Figure 3.1: organisational chart of Sudanese Islamic banks.

Chart adapted from Banks annual reports.



3.5. The Performance of the Sudanese Banking Industry 2005-2013

Sudanese banks are very small if compared to international standards. The paid-up capital, together with the reserves of the Sudanese banking industry as a whole , at the end of 2013 was 13,149 million Sudanese pounds ($1,314million) with an increase of 21% from the year before (Bank of Sudan, 2013). The total asset of Sudanese banks was 77,479.8 million Sudanese pounds ($7,748 million) with an increase of 15.6% from the year before (Bank of Sudan, 2013).

Table 3.2 summarizes some selected financial and performance indicators of the Sudanese Banking system during 2005-2013.

Table 3.2 Selected Financial and Performance Indicators of Sudanese Banks, 2005-2013

year	Total assets in million pounds	Total equity in million pounds	Total equity to total assets %	LLP to total loan	Total Liab. to total assets %	Current assets to total assets %	Pls to total finance %	non-PLS to total finance %	Salam to total finance %
2005	16,979	2,336	14	16	0.64	01	35	43	2
2006	23,144	3,890	17	12	0.56	01	26	53	1
2007	26,197	4,606	18	12	59	02	17	58	0.6
2008	30,650	5,248	17	11	59	02	18	46	2
2009	36,666	6,678	18	12	66	02	18	55	2
2010	43,107	7,477	17	11	67	02	16	54	1.20
2011	46,504	6,678	14	12	65	02	13	61	0.7
2012	67,049	6,717	10	12	66	02	16	49	1.9
2013	77,479	13,149	17	11	63	02	16	53	2

Source: Source: calculated by the author from Bank of Sudan's annual reports from 2005 to 2013

According to the table, the paid-up capital together with the reserves of the Sudanese banking industry as a whole has increased from 2,336 in 2005 to 13,149, in 2013 (463%). The total asset of Sudanese Islamic banks increased from 16,979 to 77,479 million Sudanese pounds: that is a 356% increase. However, total equity to total assets increased from 14% in 2005 to 17% in 2013, indicating that there is no remarkable change in the proportion of the total assets that are financed by stockholders. The solvency position of Sudanese Islamic Banks remains almost the same during the study period. A deeper view about their solvency position is found by calculating the leverage ratio, as measured by total liability to total assets, which shows a high but stable leverage ratio during the period of study.

Using current assets to total assets as a liquidity measure Sudanese Islamic Banks have almost stable liquidity ratios over the years 2005-2013 (1%-2%). Meanwhile, loan loss provision to total loan as credit risk has ranged between 11% and 16% indicating fluctuations in banks' credit risk during the study period.

With respect to Islamic Banks modes of finance, table 5.2 shows that the total amount of funds specified for PLS modes of finance has decreased from 35% in 2005 to only 16% in 2013, reflecting that this type of finance is not the desirable investment for Sudanese Islamic Banks. In contrast, non-PLS mode of finance has fluctuated between 43% and 61% during the study period, ending with 53% in 2013. This indicates that this mode of finance has the largest share of investment from amongst other modes of finance, including PLS.

Finally, although the fact that Sudan is famous for its fertile lands, Salam mode of finance has interestingly contributed only 0.6% to 2% of total modes of finance. This could possibly be justified by the argument by Alnabulsy (2014), who report that most of the banks are not interested in funding agricultural activities because these activities are surrounded by many types of risks, most of which are related to the uncertainty of prices, products, and fulfilment of the agreement by the farmers.

3.6. Summary

The development of Islamic Banking in Sudan can be divided into six main stages. The first phase of Islamic Banking started by the foundation of the first Islamic bank, Faisal

Islamic Bank, in 1977. This was followed by the establishment of three more banks opened in 1983, Sudanese Islamic Bank, Tadamoun Islamic Bank, and Islamic Cooperative bank. These Islamic banks used to operate in an environment that were ruled by traditional banking systems. However, their formation was received by high acceptance from the public who were uncomfortable with investing their money in a traditional banking system. This gave the Islamic Banks a chance to grow in terms of assets, deposits, and profitability. The second phase began when the whole financial system of Sudan started to be transformed to Islamic system in September 1983. During this period two more Islamic banks were founded; the Islamic Bank of Western Sudan and AlBaraka Bank Sudan. The third phase started after the downfall of the second military regime in 1985 and terminated with the beginning of the third military regime of 1989. During this phase, Islamic banks were enforced to operate in an unfriendly environment supported by negative media coverage and regulations. Consequently, some banks returned back to operate as conventional banks. The fourth phase started in 1989 when the Sudanese economy was governed by Islamic law. The fifth phase began after the peace agreement of 2005 during which the system was restructured to be able to adapt to a dual banking system, Islamic in the north and Conventional in the south. The final phase started in 2011, after the separation of northern and southern parts. In this period, only Islamic Banks are allowed to operate in Sudan.

This chapter acts as a foundation chapter in presenting the necessary literature on the nature of the economy of Sudan, the development, the organisational structure, and the main performance characteristics of Sudanese Banking Industry. The next chapter aims to discuss the theoretical framework of the determinants of banks' performance, which are used to formulate the research questions.

Chapter Four

Literature Review of Studies of the Determinants of Banks' Profitability

4.1. Introduction

Empirical Studies on the determinants of profitability within the banking industry are numerous. Some of them are country specific and few of them focus on a panel of countries. Examples of studies aimed at explaining bank profitability in a single country are Berger (1995), Samad and Hassan (1999), Bashir (1999), Naceur (2003), DeYoung and Rice (2004), Athanasoglou *et al.,* (2005), Dietrich and Wanzenried (2009), Ramadan (2011), Ahmad *et al.,* (2012) and Qudah and Jaradat (2013). Studies aim at analysing bank profitability in groups of countries include Bashir (2003), Goddard *et al*., (2004), Athanasoglou *et al*., (2006), Flamini *et al*., (2009) and Karim *et. al*., (2010). With regards the nature of the banking system, these studies can be divided into two groups. Studies that focus on the profitability determinants of a conventional banking system and those that focus on Islamic banking system. A small number of studies has been carried out on the comparisons of profitability determinants between Islamic and conventional banks.

4.2. Single Country Studies

4.2.1. Traditional Banks:

Earlier, Berger (1995) examines a sample of US banks during 1983-1992 to understand the relationship between return on equity and capital to asset ratio. He found a positive relationship between these two variables.

Lter, Guru *et al*., (2002) investigate the determinants of better performing deposit banks in Malaysia. They utilise a sample of seventeen banks during 1986-1995. Their study uses liquidity, capital adequacy, expenses management, assets composition and firm size as explanatory variables. Their findings reveal that poor expenses management is the main contributor to poor profitability performance. Liquidity was found to be negatively and significantly related to profitability. Guru *et al*., (2002) also reveal that high capitalisation and assets composition are negatively and significantly related to profitability in Malaysian commercial banks. From among the variables they used, only bank size was shown to have no impact on the profitability of Malaysian banks.

Ben Naceur and Goaied (2008) examine the impact of bank characteristics and financial structure on Tunisian banks' profitability during 1980-2000. They suggest that capitalisation and overhead expenses are positively and significantly related to the profitability of Tunisian banks. Their findings also suggest that Tunisian private banks are relatively more profitable than their state-owned counterparts

Heffernan and Fu (2010) use ROA, ROE, and NIM as a measure of performance of Chinese banks during 1999 and 2006. They use bank size, ownership, specialisation and whether a bank is listed on a stock exchange or not as determinants of performance. They found that banks, which are specialised in rural development, are more profitable than other types of banks. This indicates a positive relationship between specialisation and bank profitability. They also found that bank listings, ownership, and size all have no significant impact on profitability.

Dietrich and Wanzenried (2009) utilise a sample of 453 banks to investigate the financial performance of commercial banks in Switzerland during 1999-2006. They use a wide range of internal determinants such as capital, the cost to income ratio and bank's credit quality. Other determinants they used include bank size, interest income share, bank age, bank ownership and nationality. Their findings show evidence of a large variation in profitability between the sampled banks. Dietrich and Wanzenried (2009) found a positive relation between capitalization and profitability. Another positive relationship was found between bank loans and profitability, especially when bank's loan volume is growing faster than the market. They also establish bank age as having no influence on bank profitability. In addition, the geographic distribution was shown to have a slight effect on profitability. With regards to ownership, foreign banks were found to be less profitable than Swiss owned banks. Likewise, privately owned banks were shown to be more profitable when compared to state-owned banks. Their empirical evidence does not show a significant impact of cost to income ratio and bank size on the profitability of Switzerland banks.

Athanasoglou *et al.,* (2005) utilise a broad range of data, which covered the period from 1985 to 2001, to examine the effect of Bank-specific and Industry-specific factors on the profitability of Greek banks. Bank-specific determinants include bank capital, credit risk, operating efficiency, expenses management and bank size. The industry-specific factors

include industry concentration and ownership. They found that with the exclusion of size, all bank-specific determinants affect bank profitability significantly and positively. However, bank size was found to have no impact on bank profitability. They also showed a negative relationship between bank profitability and operating expenses and increased exposure to credit risk. Factors related to the industry structure appear to have no significant impact on profitability. Kosmidou (2008), who uses a set of specific financial ratios to study 30 Greece banks over the period 2003-2004, supports the findings of Athanasoglou *et al.,* (2005) and concludes that banks which are better capitalised with less operating cost earn a higher return on assets.

Alper and Anbarb (2011) utilise a sample of 10 Turkish commercial banks during 2002 – 2010 to investigate the bank's profitability. They focus on its size, capital adequacy, and deposit. They establish a positive and significant relationship between bank size and profitability, measured by both ROA and ROE. Their findings provide evidence for the impact of economies of scale on profitability. Non-interest income/assets ratio was also shown to have a positive and significant effect on ROA. This reflects that greater activity diversification results in greater returns. They found that assets quality set up has a negative and significant influence on ROA, which means that credit portfolio, size and asset quality impact ROA negatively. Alper and Anbarb (2011) also prove a negative relationship between loans and profitability exist. Additionally, all other remaining internal profitability determinants - capital adequacy, liquidity, deposits and net interest margin – were shown to have no impact on the profitability of Turkish banks. This is contradicted by the findings of Gulhan and Uzunlar (2011), who investigate the financial performance of the Turkish banks over the period 1990-2000. In their findings, they establish significant effects of both capital adequacy and liquidity on ROA.

Atemnkenf and Joseph (2006) utilise ROA, ROE, and ROC as performance measures to investigate major determinants of financial performance of three leading Cameroon commercial banks during 1987 to 1999. The explanatory variables are risk, size, expenses control, time and savings deposits to total deposits and deposit composition. Their findings prove no significant effect of a bank's size and deposits on profitability. Finally, Atemnkenf and Joseph provide evidence of a positive relationship between risk, measured by loan to deposit ratio, and profitability.

Naceur (2003) uses NIM and ROA to assess the influence of capital ratio, overhead, loan and financial structure on the Tunisian banking industry. His study includes a sample of 10 deposit banks during 1980 to 2000. From this study, he proves that there is a positive relationship between the two profitability measures and the amount of capital. He shows that a well-capitalized bank is characterised by lower cost of capital and reduced expected bankruptcy costs. He also proves that high ROA is also significantly connected with large overheads and bank loans. In addition, Naceur demonstrates that due to scale inefficiencies, bank size has mostly a negative and significant impact on profitability. Therefore, he suggested that a bank's profitability can be enhanced by reducing the size of large banks to optimal levels. This finding is, however, in contradiction with the finding of DeYoung and Rice (2004), who studied US commercial banks between 1989 and 2001. They demonstrate a strong positive relationship between profitability, measured by non-interest income, and large banks size. Furthermore, Naceur (2003) suggests that bank profitability stems mainly from interest-bearing assets because non-interest bearing assets have no significant influence on return on assets.

Within a single country study, Lee (2012) compares the determinants of profitability of Korean national and regional banks during 1994-2008. He shows that the banking nature and characteristic have a significant effect on variables that explain a bank profitability. He reports that due to economies of scale, asset size is significantly positive when associated with ROA for the regional banks, but insignificant for the national banks. Concerning the relationship between bank capital and profitability, Lee proves that capitalization has significantly positive association with ROA for both national and regional banks. His findings also establish that loan ratio is important and positively related to ROA for regional banks. However, it is not as important for national banks, as loans are better managed by regional banks. Focusing on the effects of leverage on profitability measures, he found that fixed asset ratio has a positive effect on regional banks and a negative effect for the national banks. Lee (2012), reports that the profitability determinants are more significant on the regional banks than national banks. He justifies the differences in performance by management decisions because the management of regional banks has taken strategically better, more supportive and aggressive decisions within different bank operations.

Chirwa (2003) investigates the factors affecting profitability within eight commercial Banks in Malawi during 1970-1994. He uses ROA, ROE and Return on Capital (ROC) as measures of profitability while the explanatory variables take account the ratio of capital to assets, loans to assets, demand deposits to total deposits and bank size. He found that loan to assets ratio has a positive and significant influence on a commercial bank's profitability in the long and short-run. This suggests that there is risk reduction in the behaviour among bank managers. Moreover, he found that the demand deposit to deposits ratio has a positive and significant influence on commercial bank profitability, proving that demand deposit is a cheaper source of funds for the banking industry in Malawi.

Using ROA as profitability measure, Al-Omar and Al-Mutairi (2008) build a five variable model to assess their impact on the profitability of seven Kuwaiti national commercial banks during 1993-2005. Their explanatory variables include capitalization, risk, non-interest assets to assets ratio, operating expenses to assets ratio, and bank size. They found that almost 67% of ROA are justified by equity, loan-assets ratio, operating expenses ratio and total assets. Al-Omar and Al-Mutairi findings establish that only capitalization, non-interest assets ratio, bank size are significant. Other findings also emphasise the importance of improving the capital adequacy and decreasing non-interest assets to enhance profitability. Additionally, they prove a positive effect of bank size, which an indication to scale efficiency, signalling a possibility of more profitability when enlarging the size of the bank.

Ahmed (1999) examines the impact of business risk, market size and the size of the bank on financial performance in a sample of eleven commercial banks in Saudi Arabia during 1987-1992. He utilises three profitability measures, which are ROE, ROA and percentage change in earnings per share as dependent variables. He found that only business risk and bank size have a significantly negative influence on a banks' profitability when measured by ROA and ROE.

Holden and El-Bannany (2004) utilise a sample of ten UK banks to investigate the introduction of information technology systems, presented as Automated Teller Machines (ATMs) on a bank's profitability during 1976-1996. They apply ROA, as a profitability measure, while the internal variables are bank size and capital. They prove that there was a positive impact on the number of ATMs installed by a bank, which saw an increase of

profitability. It also reduced labour and transactions costs, as well as producing revenues from charges associated with using ATMs.

4.2.2. Islamic banks

Karim *et al*., (2010) report that studies emphasising only on Islamic banking profitability are not numerous, but they can still be found in the literature. Such studies focusing on a particular country can be seen in work of Bashir (1999), Samad and Hassan (2000), Ramadan (2011) and Qudah and Jaradat (2013).

Ramadan (2011) uses unbalanced data from Jordanian Islamic banks between 2000 and 2010 to investigate the impact of capital adequacy, credit risk, and liquidity management efficiency. He also investigates bank size, expenses management efficiency, non-interest earning and bank size on their profitability. His results show that well-efficient management, higher credit risk, and capital adequacy lead to higher return on assets and profit margin. Additionally, he found that efficient management of operating expenses influences the profit margin positively and significantly. Yet, it has no significant influence on the ROA. Additionally, his findings suggest that bank size and non-interest earning seems to have no significant influence on the profitability of Jordanian Islamic Banks. Ramadan (2011) reports that because of the distinctive characteristics of each bank, the effects of its internal determinants on profitability are varied amongst Jordanian Islamic Banks.

Qudah and Jaradat (2013) assess the profitability of two Jordanian Islamic banks during 2000–2011. Their findings show that capital adequacy on Islamic banks in Jordan has a positive and significant impact on both ROA and ROE. Banks with a higher capital are expected to gain higher profits due to their use of a low-cost and low-risk financing sources. Qudah and Jaradat found that a bank's size is an excellent determinant of the profitability of Jordanian Islamic banks. Their findings also establish a negative and significant relationship between leverage, as measured by total deposits to total assets, and ROA and ROE. This has been justified by the fact that banks are more open to credit risk, which may lead to profitability reduction. Additionally, the findings show that liquidity has an insignificant impact on ROA and a negative significant impact on ROE.

In the case of Pakistani Islamic banks, Javaid *et al*., (2011) and Ali *et al.,* (2011) investigate the profitability determinants of a banking sector. Javaid *et al*., (2011) utilise ROA to investigate the influence of factors affecting the profitability of the top 10 Pakistani banks during 2004-2008. They found that higher total assets may not essentially lead to higher profits as diseconomies of scale may give adverse effects. This due to the possibility of bureaucratic strategies and managerial incapability of excessively large banks. However, their impact is not significant, which mean that more assets can increase profitability, but with less significance on overall profitability. Javaid *et al*., (2011) also found that equity and deposits have a positive significance on profitability, whilst loans are proven to be unimportant. They also report that when a bank shows a loss, there will be a negative association of loans and profitability.

Ali *et al.,* (2011) utilise both ROA and ROE as profitability measures to examine the performance of 22 public and private sector commercial banks in Pakistan over the period 2006-2009. Their findings suggest that the positive ROA of these banks are due to bank size. On the contrary, in the case of profitability, which is measured by ROE, bank size is proven to have a negative effect. Ali *et al.,* (2011) also report a negative relationship between capital and credit risk on one hand and ROA on the other hand. They also prove that operating efficiency, portfolio composition, and asset management have affected ROE positively. On the other hand, they prove that operating efficiency and credit risk are negatively influencing profitability.

Ahmad *et al.,* (2012) investigate the internal determinants of Pakistani domestic commercial banks during 2001-2010. The results show that cost, ratio of share capital as a percentage of total assets and loan are significantly and negatively related to the return on assets. They also establish a negative and insignificant association between liquidity and ROA.

Idris *et al*., (2011) use quarterly data from nine banks, which consist of both foreign and local Islamic banks allocated in Malaysia to investigate their profitability determinants during 2007-2009. He proves that bank size is the main factor, which significantly determines a Malaysian Islamic bank's profitability. He also establishes that other factors such as capital adequacy, expenses management, credit risk and liquidity have no effect on a Malaysian bank's profitability.

Similar findings of Idris *et al*., (2011) come from an earlier study of Izhar and Asutaya (2007), who investigate the profitability of Bank Muamalat Indonesia during 1996-2001 and found an insignificant relation between profitability and capital. Izhar and Asutaya (2007) also found an insignificant relationship between profitability, leverage, overheads and liquidity, but positive relationships between risk and profitability indicating that the Islamic bank has incentives to undertake more risks. They also establish a negative relationship between total financing as a percentage of total assets and profitability, indicating that the Islamic bank's portfolio is seriously biased in the direction of short-term trade-based financing loans.

In the context of single country studies, some compare the performance of Islamic and conventional banks in countries where a dual banking system is adopted. These types of studies can be seen in Samad and Hassan (2000) and Samad (2004).

The work by Samad and Hassan (2000) is considered one of the pioneering studies that focus on the efficiency and the performance of Islamic banks. They use risk and solvency, liquidity and community involvement to assess the performance of Bank Islam Malaysia Berhad and compare it to a group of 8 conventional banks for the period 1984-1997. They suggest that the bank has relatively more liquidity, less risk, and more solvent. Their findings also revealed that there is no progress or difference in community involvement between the two banking systems. Additionally, Samad and Hassan (2000) compare the performance of Islamic and conventional banks, in terms of community financing and contributions in a government project. Their findings do not show any difference during the year of study. With regards to profitability, they prove that the bank has made a significant increase in profitability when measured by both ROA and ROE. They also find that Islamic banks tend to become inefficient when operating in an environment of dual banking.

Samad (2004) examines the performance of Bahrain Islamic and conventional banks during the post-Gulf War period with respect to profitability, liquidity risk, and credit risk. He utilises sample of 15 conventional banks and 6 Islamic banks during 1991-2001 using ROA, ROE and cost to income ratio as performance measures. He concludes that there is no main dissimilarity in profitability and liquidity between the two kinds of banks.

Yet, based on ROA findings, he proves that the Islamic banks are more profitable and enjoy lower credit risk than conventional banks.

4.3. Panel Country Studies

The panel country studies can be shown in studies done by Bourke (1989), Molyneux and Thornton (1992), Kunt and Huizinga (1999), Bashir (2000), Al-Tamimi (2005) and others.

4.3.1 Traditional Banks:

Bourke (1989) was first to explore profitability determinants in a study involving cross-country banks in Europe, North America, and Australia. He uses capital, liquidity, and staff expenses as independent variables and net profit before taxes to total capital and net profit before taxes to total assets as dependent variables. Bourke's findings suggest that all these variables are positively related to the profitability of all cross countries banks.

Further study is carried out by Molyneux and Thornton (1992) who duplicate Bourke study using a sample containing 371 -671 banks from 18 European countries during the 1986-1989 period. They establish that government ownership and the level of interest rates have a significant positive association with ROE. They also found that staff expenses have a strong positive relationship with ROA. Conversely, liquidity effect investigation proves a weak inverse relationship with profitability due to the cost associated with liquidity holdings.

Kunt and Huizinga (1999) overall results from a mix of 80 banks from developed and developing countries during the period 1988-1995 confirm a positive relationship between capital ratio and profitability. They report that a well-capitalised bank faces a lower cost of funding because of a lower probability of bankruptcy costs as well as having a lower need to borrow for assets acquisition. They also found that banks that use deposits as the main source of funding are less profitable. They justify this inverse relationship by the nature of deposits which required high branching and other expenses. Additionally, they found no relationship between profitability and overhead expenses as banks forward these cost to customers. Moreover, a negative relationship between profitability and non-interest earning assets was established as banks with high non-interest earning assets were

found to be less profitable. Kunt and Huizinga (1999) also prove that loans to total assets have a negative influence on profitability, whilst short-term funding has a negative and significant impact on profitability. Finally, they found that foreign banks gain higher profitability than domestic banks in developing countries, whereas banks in developed countries are characterised by the opposite.

Flamini *et al.,* (2009) utilise a sample of 389 banks in 41 Sub-Saharan Africa countries (SSA) for the period 1998-2006 to study their determinants of bank profitability. They also investigate the reasons behind the extreme increase in profitability of African banks. They found that nearly all foreign banks in SSA focus their activities on the service sector, avoiding the financing of riskier activities such as agricultural investments. Their findings show that higher ROA is associated with a larger bank size, which is consistent with the findings of Athanasoglou *et al*., (2006). The association also contradicts the earlier findings of Goddard *et al*., (2004), who identify a negative association between bank size and profitability in six European banks. Furthermore, Flamini *et al.,* (2009) found that a higher ROA is associated with high activity diversification and private ownership. They also establish that credit risk has no significant impact on a bank profitability.

Al-Tamimi (2005) compares the determinants of bank performance between UAE national and foreign commercial banks in the period 1987-2002. His findings suggest that a banks' size and portfolio composition are the most significant determinants of profitability of national banks. With regards to foreign banks, he found the most significant profitability determinants are capitalisation and leverage. Liquidity is found to less significant in determining national banks profitability, whereas variables of portfolio composition and costs are established as less significant for foreign banks.

Goddard *et al*., (2004) investigate the performance of European banks across six countries. They found a positive relationship between profitability, liquidity, and capital to assets. They also show an insignificant relationship between the profitability of European banks and bank ownership, size and off-balance-sheet transactions. Their sample shows that English banks are the only one that shows a significant positive relationship between off-balance-sheet activities and profitability.

Later, Athanasoglou *et al*., (2006) investigate the profitability of the south-east Europe banking industry over the period 1998-2002. Their results indicate that a bank size has a

positive and significant impact on its profitability. This contradicts the earlier finding of Goddard *et al*., (2004), who found a weak relationship between bank size and profitability. Athanasoglou *et al*., (2006) also establish that capital has a positive and significant impact on a banks' profitability. This is consistent with earlier findings of Goddard *et al*., (2004) who identify a positive relationship between banks profitability and capital. Athanasoglou *et al*., (2006) also document that loan-loss provisions and operating expenses have a negative and significant impact on south-east Europe banks' profitability. Furthermore, they prove that bank loans have an insignificant impact on profitability.

4.3.2. Islamic Banks

In the Islamic Banking context, the empirical work of Haron (1996a) represents the first attempt to explore factors that contribute towards the profitability of Islamic banks. He examines the impact of liquidity, total expenses and source of funds (current accounts, saving accounts and investment accounts) on the profitability of Islamic Banks in Middle East, Africa and Asia for the period 1984 to 1994. He also investigates the impact of PLS versus non-PLS, capital, and reserves. His findings suggest a positive relationship between profitability and non-PLS modes of finance as measured by *Morabahah* and negative relationship between PLS and profitability. He also finds a positive impact of liquidity, capital and reserves and total expenses on profitability. Findings of Haron (1976a) also indicate that savings and investment deposits represent costs to the banks.

Further, Bashir (2003) investigates the profitability determinants of 14 Islamic Banks from 8 Middle Eastern Countries during 1993 to 1998. He concludes that there is a positive relationship between profitability and short-term funding, capitalisation, loan ratios and overhead expenses. He also found that due to technological advantages foreign ownership affect profitability positively.

Haron (2004) studies the impact of liquidity, capitalisation, overheads and credit risk on the profitability of Islamic banks in five countries over 1984-2002. He also examines the impact of total expenditures, PLS mode of finance and Morabahah. His findings suggest that capitalisation and liquidity increase the profitability of these banks, whilst PLS, where relation exist, is significantly and negatively associated with profitability. He also

found that Morabahah, overheads, credit risk, total expenditures have no significant relationship with profitability.

Recently, Noor and Ahmad (2011) investigates the impact of the operating expenses, equity and non-performing loans to total loans on the profitability of 78 Islamic banks in 25 countries during 1992 to 2009. They found that the operating expenses and equity have a positive and significant effect on the financial performance of Islamic banks whilst non-performing loans are proved to be insignificant.

Haron and Azmi (2004) investigate the profitability determinants of a sample of Islamic banks in Malaysia, Bangladesh United Arab Emirates, Jordan and Bahrain for the period 1984 to 2002. They prove that liquidity is the only factor that has a significant positive relationship with profitability.

Karim *et al*., (2010) examine the profitability determinants of African Islamic banks over the period 1999-2009. Their findings showed that bank capital and size increase profitability whereas assets quality, credit risk, and operating efficiency reduce it.

Alkassim (2005) investigates the profitability determinants of Islamic and Conventional banks in GCC countries between 1997 and 2004. He focused on the impact of bank size, capitalisation, deposits composition, total expenses and overhead expense. His findings show that bank size has a positive relationship with the profitability of Islamic banks and negative relationship with Conventional banks one. With regards to capitalisation, he proves that higher capital ratios of Islamic banks support profitability and give positive relation. Meanwhile, a negative relation between capitalisation and profitability of conventional banks was found. Additionally, Deposits impact Islamic banks profitability negatively whereas it supports Conventional banks profitability. Alkassim (2005) also proves a positive relation between total expenses and the profitability of Islamic banks and negative relation for Conventional banks. Additionally, total loans and overhead expense assist the performance of both Islamic and conventional banks.

Srairi (2010) assesses the impact of a number of bank-specific on the profitability of Islamic and conventional banks in the Gulf Cooperation Council over the period 1999-2007. He establishes a negative association between operational efficiency and profitability of the two types of banks. He also found that the profitability of the two sets

of banks is positively affected by a bank financial risk and size. He also suggests a negative relationship between liquidity and profitability, owing this to the surplus of liquid assets that is kept by the banks. His finding on credit risk shows a positive relation with profitability for Islamic banks and negative for conventional, which has been justified by soaring loan loss provisions and default costs in conventional banks. Srairi (2010) shows that financial risk as measured by total liabilities to total assets, as well as economies of scale, enhance the profitability of Islamic banks.

In his comparison between the profitability determinants of Islamic and conventional banks, Haron (1996b) investigates the performance of fourteen Islamic and conventional banks in ten countries. He found that Islamic banks in competitive markets gain more than those which operate in monopolistic ones.

4.3. Earlier studies on Sudanese Banking Performance:

In Sudanese context, there have been extensive researches in the area of banking and finance (e.g., Hussein, 2003; Abdel Mohsin, 2005; Ahmed, 2008; Alam, 2010 and Eljelly and Elobeed 2013), however, Bashir (1999) is the only one that focuses on an explicit analysis of the profitability determinants of Sudanese Islamic banks. Thus, a comprehensive and recent analysis of the determinants of Sudanese Islamic banks is indeed lacking

Bashir (1999) is the first to investigate the financial performance of Sudanese Islamic banks utilising data from two Sudanese banks Faisal Islamic Bank (FIBS) and Tadamon Islamic Bank (TIBS). He examines the relationships between bank size and profitability using 15 years' data for FIBS and 10 years for TIBS. His findings show that the two variables are significantly and positively correlated, proving that Islamic banks gain more profits as they grown in size. Yet, he reveals that larger banks are economically efficient but at the same time they are highly levered. Additionally, he confirms that there are significant negative impacts of the risk variable on bank size, which means that as the Islamic banks expand in size, their operating risk is lessened.

Abdel Mohsin (2005) uses data over the period 1992-1999 to identify that the Sudanese banks play a great role in gathering and redirecting saving to be invested in different sectors. These sectors include the small project in agricultural, industrial, crafts and social

sectors. He also traced the increasing amount of deposit by savers to the expansion of the banks in all region of Sudan. In other words, opening more branches in different regions enhanced the development of different sectors. Abdel Mohsin (2005) findings also show that Murabahah is the most widely used mode of finance when compared to others modes, followed by Musharakah and Mudarabah respectively.

Ahmed (2008) utilise Sudanese banks' annual reports for the period 1990-2004 and survey to investigate the reason behind the small size of investment in PLS modes of finance. He found that the lack of well-informed and trained bankers who take decisions on selecting, assessing and supervising profitable projects is a major reason that lessens the investment in the PLS mode of finance. He also proves that Sudanese Islamic banks gain high profitability but are exposed to high-risk at the same time.

Hussein (2003) investigates the operational efficiency of 17 Sudanese banks for the period 1990-2000. He classifies banks according to their ownership into joint, state-owned and foreign banks. His findings show efficiency variation across the three types of banks. A smaller size foreign banks are found to be more efficient than government - owned and joint ownership banks, suggesting a negative relationship between the cost efficiency and the bank size. He justifies that by the limited size of the Sudanese economy which prevents large banks from setting up enough projects to make the most of their resources utilisation and costs minimisation. Hussein (2003) also identifies cost inefficiency related to human capital development as the survey results show that spending on staff development and training is quite low. He also reports a negative relationship between the cost efficiency and the level of domestic equity and government equity.

Alam (2010) examines the potential effect of introducing modern technology presented in the online banking in the Sudanese Islamic banks. He documents that none of the Sudanese banks (including foreign banks with their significant technological advancements) utilise this service. Yet, 95% of Sudanese bankers believe that online banking will have great reflect on their bank's performance.

Eljelly and Elobeed (2013) use data from the nine oldest and largest Sudanese banks to explain the common performance characteristics of banks operating in Sudan over the period the 1998-2007. They found that most of the variation in Islamic banks performance

are justified by their liquidity risk, efficiency, profitability and capital adequacy ratio. They also found that the impact of these factors is constant over time.

4. Summary

Table 4.1 below provides a brief summary of the variables that were used as profitability determinants in the studies reviewed.

Table 4.1: Variables that are used as Determinants of Banks' Profitability, their Signs, and Significance

Variable	Positive and significant	Negative and significant	Insignificant
Bank Type: Ownership	- Molyneux and Thornton (1992) - Bashir (2003) - Athanasoglou *et al*., (2006) - Heffernan and Fu (2010) - Berger *et al.,* (2009) - Bashir (1999)	- Bourke (1989)	- Flamini *et al.,* (2009)
Bank Type: Specialisation	-Heffernan and Fu (2010)		Maudos *et al*., (2002) Naceur and Goaied (2008)
Bank Age	-Beck *et al.,* (2005) -Beck and Kunt (2006)		- Dietrich and Wanzenried (2009)
Bank size	-Short (1979) -Alkassim (2005) -Flamini *et al.,* (2009)	-Naceur (2003) -Athanasoglou *et al.,* (2008)	-Goddard *et al.,* 2004 -Athanasoglou *et al*., (2005)

	-AL-Omar & AL--Mutairi (2008) - Karim *et al*., (2010)	-Javaid *et al*., (2011)	-Atemnkenf and Joseph (2006) -Lee (2012)
Capitalisation	-Bourke (1989) -Molynuex and Thorton (1992) - Berger (1995) -Goddard *et al.,* (2004) - Guru *et al.,* (2002) - Hassan and Bashir (2004) - Karim *et al*., (2010)	-Hassan and -Bashir (2003) - Ali *et al.,* (2011) - Izhar and Asutaya (2007)	-Short (1979) -Alper and Anbar (2011)
Liquidity	- Bourke (1989) -Al-Tamimi (2005) - Haron (2004)	- Molyneux and Thornton (1992) - Bashir (2000) - Hassan and Bashir (2003)	Qudah and Jaradat (2013)
Credit Risk	-Heffernan and Fu (2010) -Srairi (2010)	-Athanasoglou *et al.,* (2005) -Athanasoglou *et al*., (2006)	-AL-Omar & AL-Mutairi (2008) - Flamini *et al.,* (2009)

		-Karim *et al*., (2010)	
Leverage	- Kunt and Huizinga (1999) - Goddard *et al.*, (2004) - Ben-Naceur (2003) - Al-Tamimi (2005) - Bashir (1999)	- Lee (2012) - Qudah & Jaradat (2013) -Izhar and Asutaya (2007)	-Short (1979) -Javaid *et al*., (2011 - Ali *et al.*, (2011)
Overhead	-Haslem (1968) -Molyneux and Thornton (1992) -Naceur (2003) - Hassan and -Bashir (2003) Ben Naceur and Goaied (2008)	- Bourke (1989)	-Kunt and Huizinga (1999 -Flamini *et al.*, (2009
Mgt Efficiency	-Molyneux and Thornton (1992) -Haslem (1968) -Lai and Li (2014) - Haron (2004)	-Athanasoglou *et al* ., (2005) - Karim *et al*., (2010)	-AL-Omar & AL-Mutairi (2008) -Ramadan (2011) -Idris *et al*., (2011)

Asset Utilisation	-Ramadan (2011) Ali *et al.*, (2011) -Naceur and Goaied (2008)	-Lai and Li (2014)	-Akhtar (2011)
PLS		-Haron (1996a) -Samad and Hassan (2000) - Haron (2004)	
Murabah	-Samad and Hassan (2000)		-Haron (1996a) - Haron (2004)

Source: Created by the author

Chapter Five

Theoretical Framework

5.1. Introduction

This chapter discusses the theoretical framework underpinning the determinants of banks' performance, as measured by their profitability. From this theoretical framework, the research questions are formulated. Generally, the determinants of banks' profitability are divided into two main categories; internal and external.

The internal profitability determinants are viewed as those that are controllable by management, such as the sources and distribution of funds, capital and liquidity management and expenses management. On the contrary, the external determinants of a commercial bank's profitability are viewed as those that are out of the control of the banks' management. These factors can be further subdivided into two types, one is of those that are linked to the firm's operating environment, such as regulation, growth domestic products and inflation, and the other, firm-specific factors such as firm size and ownership. This study focuses on internal profitability determinants as well as bank-specific factors. As the studied banks are all located in the same country, the environmental factors will be eliminated because it will have the same impact on all banks.

The following section examines the variables used in this study. The ROA and ROE are used as dependent variables. The independent variables include the banks' age, size, and type, as measured by ownership and specialisation. Bank capital, liquidity, credit risk, leverage, operational efficiency, staff expenses, and assets utilisation are also used as independent variables. The set also includes profit and loss sharing (Modarabah and Mosharkah), non-profit and loss sharing (Morabahah) and Salam mode of finance.

To measure these variables, either a ratio method or dummy variables were used. Each of the two measures has its own advantages, and both have been widely used in the past (see Haron, 1996a and Samad and Hassan, 2000, for instance). The advantage of using a ratio method is reported by authors such as Samad (2004) who states that the user of this method benefits from its ability to compensate disparities of economic entities. Samad

also remarked that since banks are varied in their sizes, the use of ratio removes the disparities in sizes and brings them at par. In contrast, the use of dummy variables has been reported by authors such as Wooldridge (2005) as helpful in calculating regression coefficients for temporal effects, qualitative variables and some cases of quantitative variables.

5.2. Profitability Measures

Traditionally, there are two ratios that are mostly used in assessing a bank's overall performance; ROA and ROE. These ratios are considered by authors such as Al-Tamimi (2005), Heffernan and Fu (2010) and Alper and Anbar (2011) as the best measures of a bank's overall performance. Some studies utilise other performance measures such as net interest margin (NIM) and Return on Capital (ROC) as measures of financial performance (see Naceur; 2003, Alkassim; 2005; Ben Naceur and Goaied, 2008 and Heffernan and Fu, 2010). As Islamic Banks are interest-free banks, NIM is excluded in this study: NIM reflects the difference between interest income and interest expense as a percentage of total assets. ROC is also excluded as the researcher prefer to use a more comprehensive measure of performance that is in relation to a wider meaning of capital, which is ROE.

5.2.1. Return on Assets (ROA)

Return on Assets is defined as the rate of return on an asset or net income over total assets (Naceur, 2003; Atemnkenf and Joseph, 2006 and Flamini *et al*., 2009). It represents a general and comprehensive measure of bank profitability and overall performance. It echoes banks capability to achieve a return from its total operations on its sources of fund. Although ROA has been criticised by authors such as Alkassim (2005) and Flamini *et al.*, (2009) for being bias due to excluding off-balance-sheet activities, it remains the most widely used profitability and performance measure. Reasons behind the popularity of ROA are provided by Bashir (1999), Samad and Hassan (2000), Samad (2004), Alkassim (2005) and Athanasoglou, *et al.,* (2005b) who all report that, ROA reflects the capability and effectiveness of management in allocating asset to produce net profit. Bashir (2003) also states that ROA is widely used by regulators because believe that ROA is the best measure of bank performance. Accordingly, it remains a superior measure of banks' financial performance and managerial efficiency.

5.2.2. Return on Equity (ROE)

Return on equity represents a measure of how much profit a bank has generated on funds supplied by shareholders (Alkassim, 2005 and Flamini *et al.,* 2009). ROE determines how efficiently the bank's management utilises shareholders' funds (Alkassim, 2005). Bashir (1999) reports that ROE shows to which extent the bank's management is successful in generating profits from shareholders' investment.

Although ROE has been criticised by Flamini *et al.,* (2009) for disregarding financial leverage and the risks associated with it, remains a widely used performance measure in literature. Reasons behind using ROE as performance measure are reported by Athanasoglou, *et al.,* (2005b) who state that ROE reflects how efficient a bank is in generating profit on shareholders' funds. Furthermore, it is more comprehensive than other measures, such as return on capital, as it covers wider sources of funds.

5.3. Profitability Determinants

The following variables are used as determinants of banks' profitability:

5.3.1. Liquidity

Liquidity is one of the major determinants that influence a commercial bank performance. Samad (2004), Samad and Hassan (2002) and Ramadan (2011) define liquidity as cash availability. In other words, it means how fast a bank can trade its assets for cash at face value to meet the cash demands of depositors and borrowers. The higher the total of liquid asset for a bank, the better is the liquidity of the bank. Samad and Hassan (2002) note that banks can experience liquidity problem when current and savings accounts are withdrawn at an extensive rate at any point time; that is, if current and savings accounts are withdrawn extensively more than new deposits in a period of time, banks will often face liquidity difficulty because they may lack enough cash to satisfy demands of depositors.

The impact of liquidity on the financial performance of firms has extensively being discussed in the literature. For example, Ramadan (2011) reports that liquidity is generally related to lower rates of return and consequently profitability. This view has also been supported by Al Mmar and Mutairi (2008); they agree that negative relationship between liquidity and profitability is likely because keeping higher liquid assets lessens

the ability of banks to produce a profit. In this case, liquidity holding can possibly be seen as an expense to the bank and will normally be associated with lower rates of profitability: the study of Molyneux and Thorton (1992) show a negative relationship between liquidity and profitability. On the contrary, however, Bourke, (1989) and Al-Tamimi (2005) note that liquidity has a positive impact on banks' performance. In this context, Al Mmar and Mutairi (2008) justify this possible positive relationship by reporting that high level of liquidity will lessen transaction costs and convince commitments and obligations without facing any undesirable losses. Meanwhile, Qudah and Jaradat (2013) establish an insignificant relation between liquidity and profitability, when they measured profitability using ROA and a negative and significant relation between the two variables when profitability was measured by ROE. Guru *et al*., (2002**)** report that the nature of the relation between liquidity and profitability largely relies on the differences in the elasticity of demand for a loan of the studied bank.

In the Islamic banking context, Haron (1996a) reports that as a profit-seeking organisation, Islamic banks hope to maximise their profitability to satisfy both shareholders and investors who placed their deposits under different profit-sharing schemes. At the same time, they need to maintain a sufficient degree of liquidity to meet their ongoing obligations. Therefore, similar to conventional banks, Islamic banks need to balance between their profitability maximisation and meeting their obligation whenever it is requested so as not to be exposed to liquidity problems.

5.3.2. Capitalization

Aburime (2008) reports that the nature of capital can be defined in two ways: narrowly, it can be seen as the amount provided by the owners of a bank (paid-up share capital) that grants them the privilege to enjoy all the expected income of a financial firm. He also reports that in more depth, it can be seen as the amount of the owners' funds that is available to support a bank's business. The last definition considers firm's reserves, which can also be termed as total shareholders' funds.

Overall, capitalization is seen as an important factor in explaining the performance of financial institutions. Sufian and Parman (2009) argue that firm's capital acts as a cushion that protects depositors in case of loss or liquidation. Similarly, Sangmi and Nazir (2010) note that high capitalisation can aid firms to lend in high risk but profitable areas as well

as in opening new branches. This has also been agreed to by Bashir (1999) who remark that capitalization, in general, represents financial collateral and hence reduces the consequences of unfavourable selection. In sum, it is clear that bank's capital is extensively used to analyse the grade of its internal financial strength and the general strength of a bank.

According to conventional banking theory, a higher equity-to-total assets ratio is linked with a lower profitability (Dietrich and Wanzenried, 2009). This theory is been justified by the view that a higher equity ratio normally reduces the equity's risk (Berger and Ofekb, 1995; Bashir, 2003 and Karim *et al*., 2010). As such, the estimated return on equity required by investors is expected to be lessened (since high risk is generally correlated with high profitability). The nature of the negative relationship between capitalisation and profitability in banks was further discussed by Berger (1995) and Lee (2012). They note that lower capital ratio is correlated with higher risk exposure, and when the higher risk is effective, that it leads to higher profitability. In essence, this study shows that there is a negative relationship between capital ratio and banks' profitability.

On the contrary, however, Berger and Ofekb (1995), Hassan and Bashir (2003) and Karim *et al*., (2010) suggest that the higher the equity ratio, the higher the profitability of the bank. They argue that the ratio of equity to total assets is one of the fundamental ratios for measuring capital strength as it comes with the percentage of total assets financed by the equity capital. For this reason, the higher capital ratio has a reflection on the banks' ability to absorb losses and control financial risk exposure. Similarly, since well-capitalized banks have access to lower costs of funding, it is thus argued that they can as a result cope with financial distress, which then enhances their ability to gain higher profits. In this context, Flamini *et al.,* (2009) report that profit may also lead to higher capital if it is fully or partially reinvested. Empirical evidence from Bourke (1989), Naceur and Goaied (2001) and Goddard *et al.,* (2004) indicate that the best performing banks are those who keep a high level of equity comparative to their assets.

Studies investigating the association between capitalisation and profitability such as Bourke (1989), Molynuex and Thorton (1992), Berger (1995), Kunt and Huizingua (1998) and Athanasoglou, *et al.,* (2005b) establish the presence of a positive impact of capital adequacy on profitability. Nevertheless, Guru *et al.,* (2002) find evidence of a

negative relationship between profitability and capitalisation of commercial banks in Malaysia.

In the context of Islamic banking Haron (1996a) suggests that there is a strong chance that the amount of capital issued by an Islamic bank does not affect its profitability. He argues that the main pillar of the traditional theory is the assumption that higher bank capital reduces both returns to the owners and the risk for the bank's depositors and the entire banking system.

He reports two reasons which can make this theory irrelevant to the nature of Islamic banking system. Firstly, there is no predetermined rate of returns given to the depositors or investors as is the case for the traditional banks. It is well known that Islamic banks offer savings and investment account facilities on the basis of *Mudarabah*, which implies that depositors share with the bank any profit or losses deriving from business operations. Consequently, in the case of a loss, depositors will also have to tolerate losses as their money will not be repaid by the bank. This means that there is a mechanical correction effect during periods of financial depression.

Secondly, Islamic banks use two methods to set up their investments with depositors' funds. The first method is that the bank pool depositors' and shareholders' funds to invest in a specific business. Profits or losses should be distributed between depositors and shareholders between the bank and the investor according to the business contract.

The second method applies when the bank uses depositors' fund solely to finance a particular business. In this case, returns from a project will go directly into a depositor's account and the bank gains profit from the fee which it applied as an equivalent to the project management costs. Bearing in mind that conventional banks normally merge both shareholders' capital and depositors' funds, one could recognise the irrelevant of the capital and profitability relation to the Islamic banking system. This argument is supported by the finding of Ali *et al.*, (2011) who provide evidence of an insignificant relationship between capitalisation and profitability of Islamic banks in Pakistan. However, it is contradicted with the finding of Hassan and Bashir (2003) who suggests a negative relationship between profitability and capitalisation of some Islamic Banks worldwide.

5.3.3. Leverage

Leverage or gearing is closely related to capital. It can be defined according to Grue *et al*., (2002) as an external source of business finance that a firm can use to improve its financial position and performance. Lai and Li (2014) report that leverage, as measured by debt to equity ratio, indicates whether a firm has the capital structure that is capable of withstanding any unexpected financial shock by holding a sufficient capital.

Though various literature suggests the importance of leverage in explaining firms' performance, they have often provided contradictory views and evidence on its actual impact (see Guru, 2002; Athanasoglou *et al.*, 2005 and Aburime, 2008, for instance). For example, while Guru (2002) suggest that banks with low leverage ratio are often comparatively protected and preferable in many cases, Aburime (2008) and Qudah and Jaradat (2013) contend that profitability often depends on the skills of banks' management to forecast, avoid, monitor and manage risks. In essence, they argue that the profitability of banks are most often determined by the policy of bank's management toward leverage. Furthermore, while Molyneux and Thornton (1992), Goddard *et al.*, (2004) and Al-Tamimi (2005) suggest positive relationship between leverage and profitability in traditional banks, Ali *et al.*, (2011) and Javaid *et al*., (2011) remark that there is no significant relationship between leverage and profitability. In sum, findings of practical studies which examine the relationship between leverage and profitability are ambiguous.

With regards Islamic banking, Qudah and Jaradat (2013) show a negative and insignificant relationship between profitability and leverage in Islamic banks while using data from the Jordanian Islamic Banks. Izhar and Asutaya (2007) also established a negative and significant relationship between leverage and profitability in one Indonesian Islamic bank.

5.3.4. Credit Risk

Athanasoglou *et al.,* (2008) and Ramadan (2011) and define credit risk as the chance of losing all or part of the interest, loan asset or both. In other words, it occurs when the expected cash flow of the principal and rate of returns on the principal assets (loans) held by banks are not paid, either completely or on their maturity date. Ramadan (2011) also

reports that it often originates from poorness of assets quality and possibly could lead to insolvency of financial institutions. Consequently, the need for adequate assets quality is natural in the banking sector as poorness of this quality is a major cause of capital grinding down and credit and capital risks rising. Therefore, monitoring asset quality indicators are important. Bashir, (1999) reports that studies on the reasons for bank failures showed that prior to failure the failing banks usually practise risk-taking behaviour. He also reports that the asset quality is a statistically significant forecaster of credit insolvency.

Hassan and Bashir (2003) report that asset quality depends largely on the quality of credit assessment, monitoring and collection within each bank, they also added that improving assets quality could be attained by collateralizing the loans, having sufficient provisions against potential losses, and avoiding asset concentration on one cretin geographical or economic sector as this make the bank more vulnerable to risk.

Athanasoglou *et al*., (2006) and Ramadan (2011), among others, report that, theoretically, the increase in Company's exposure to credit risk is an indication of lower credit quality and consequently lower profitability. This has been discussed by Athanasoglou *et al*., (2005) who prove the negative and significant impact of credit risk on profitability. Ali *et al.,* (2011) explain that banks, who are involved in borrowing and lending activities, need to create a loan loss provisions to lessen the risk. This risk adverse policy, they note, applies creation of loan loss provisions from retained earnings of banks on a yearly base. Therefore, they conclude that banks need to have effective credit risk management so as improve their profitability,

On the contrary, AL Manaseer (2009) reports that investors normally prefer less risky outcomes. Yet they agree to invest in it when risky assets have higher returns than those available from non-risky assets. Dietrich and Wanzenried (2009) and Albar and Anbar (2011) prove that increase in credit risk indicators is positively associated with profitability, so far the bank does not operate on an unacceptable level of financial risk.

Credit risk can be measured by many indicators, including non-performing loans to total gross loans, the ratio of loan-loss provision to total loans, the ratio of net loans to total assets and total loan to total deposit.

5.3.5. Management Efficiency or Operational efficiency

One of the key determinants of banks' profitability is the operating expenses, which are incurred to attain profit. This expenses could be used to assess how efficient a management is in generating profits (Al Omar and Mutairi, 2008).

The literature argues that reduced expenses enhance the profitability of a financial institution, leading to a negative association between the operating expenses and profitability (Bourke, 1989). In this context, Srairi (2010) argue that inefficiency related to this aspect could be related to the bank size, as smaller size assets make the bank unable to benefit from economies of scale.

On the contrary, Molyneux and Thornton (1992) prove that operating expense are positively impacting the profitability of European banking sector. Ramadan (2011) explains that the positive relationship between expenses and profitability arises from the fact that banks are able to transfer such expenses to the customers.

In the context of Islamic banks, Srairi (2010) reports an inverse relationship between profitability and cost, within Gulf countries' Islamic banks. He argues that this negative association could either be related to the lower amount of risk carried by Islamic bank or because Islamic banks operate in an unsupportive regulatory environment.

5.3.6. Overhead Expenses

For the most part, the literature claims a negative relationship between overhead expenses and profitability, because efficient banks are expected to operate at lower costs. This implies that the lower overhead expenses improved the efficiency, and therefore, the better profitability of the financial institution (Bourke, 1989). Similarly, Hassan and Bashir (2003) report that as efficient banks are likely to operate at lower costs, high overhead expenses is expected to have a negative impact on profitability. On the other hand, however, Molyneux and Thornton (1992) findings support a positive association between overhead expenses and profitability: their study implies that employees' productivity improve with the wage rate. Another positive relationship between profitability and overhead expense has been established in the Tunisian study by Naceur (2003) and Malaysian study Guru *et al*., (2002). The supporters of this view claim that these banks are able to transfer their overheads to users' of their financial services.

In the same context, Al Omar and Mutairi (2008) argue that staff cost may positively relate to profitability as banks with higher paid staff expenses may benefit from superior quality. Further opinion on this determinant has been given by Hassan and Bashir (2003) who report that the utilisation of new electronic technology, such as ATMs and other automated method of services delivery, have caused overhead expenses to fall. Consequently, lower overhead expenses may impact performance positively. In any instance, it should be appealing to identify the dominant effect in a completely Islamic banking environment such as Sudan.

5.3.7. Assets Utilisation

Assets utilisation measures how capable and optimal a firm's management uses its resources (Ramadan, 2011). It is well known in the business world that the success of any organisation is associated with its ability to manage and utilise its assets. Vijayakumar (2012) reports that asset utilization ratios are particularly important for serving two related objectives. Firstly, it reflects an overview of internal monitoring, concerning performance over multiple periods. Secondly, it gives an early warning or acts as a yardstick for the sensibility of the conclusions that may be reached on operational results. Rosly and Abu Bakar (2003) reports two reasons through which management can enhance its assets utilisation and consequently raise the bank's average yield on its assets. Firstly, management can enhance its assets utilisation by carefully allocating banks' assets to appropriate alternative of yielding investment. Secondly, improving assets utilisation could also be attained by avoiding unnecessary and excessive risks.

Concerning the nature of the relationship between assets utilisation and profitability, it is commonly agreed that it is positive (see Atemnkenf and Joseph, 2006 and Bourke, 1989). This is due to the reason that good level of assets utilisation enables financial institutions to improve and expand their investment. On the other hand, Lai and Li (2014) find that there are negative insignificant relationship between assets utilisation and profitability, which imply that high profits earned by the banks do not represent higher assets utilisation.

In the context of Islamic banking, Ramadan (2011) proves a positive and significant relationship exists between assets utilisation and profitability of the Jordanian Islamic banks. He also proves that the effects of this determinant varied among these banks.

5.3.8 Bank Size

One of the essential questions related to bank policy is regarding which size is optimal for bank profitability. The results of the studies on the relation between bank's size and profitability are conflicting. On one hand, the effect of an increasing size on profitability has commonly been confirmed to be positive to a certain extent. The study of Short (1979), Alkassim (2005) and Flamini *et al.,* (2009) establish a positive and significant relationship between bank size and profitability. They also report that bank size is closely related to capital efficiency: this, they note, is because large banks are more able to have cheaper sources of financing with low costs, which will positively be reflected in the profitability of the bank.

On the contrary, evidence from practical studies such as Naceur (2003) and Athanasoglou *et al.,* (2008) stands for negative relation between bank size and profitability. They prove that big banks have very limited economies of scale advantage[1], as enlarging the bank size usually leads to limited cost reduction. Athanasoglou (2005) and Athanasoglou *et al*., (2006) propose that the influence of a growing bank's size on profitability may be positive up to a certain limit. Then the effect of size could be negative due to bureaucratic and other reasons. Bashir (1999) discuss the argument on the effect of size on banks performance. He reports three advantages associated with bigger size. Firstly, he reports that bigger size raises efficiency by taking the advantage of economies of scale and decreases the costs of information gathering and processing. Secondly, banks with bigger size also have more chances to finance a bigger number of profitable investments than smaller banks. Thirdly, they are proved to enable the bank to have more activity diversification which is associated with higher returns to depositors and equity holders. On the other hand, Bashir (1999) argue that banks with greater activity diversification are more exposed to financial and operating risks. He adds that large banks could face financial risk due to low capitalization. Meanwhile, the operational risk that faces larger banks is rooted to how risky the bank's asset portfolio is. Nevertheless, he concludes that

1 Economies of scale are commonly defined as reductions in the cost per unit of a product being manufactured and sold (Haron, 1996).

as larger banks' size is commonly well capitalised and more diversified, it is expected that both financial and operating risks are usually weakened.

In some literature, it is contended that small profitable banks exist (see Heffernan and Fu, 2010, for instance). The excel of small size banks has also been justified by Beck and Kunt (2006), who argue that in the lack of well-developed financial markets and legal systems, it becomes more difficult for financial organizations to expand to their optimal size. Another explanation which makes smaller banks more profitable is given by Atemnkenf and Joseph (2006), who report that smaller banks are easy to manage in terms of control and coordination.

In the context of Islamic banks, the large size is expected to make the Islamic banks more able to offer a large set of financial services. Although this diversification could make the Islamic banks more vulnerable to both financial and the operational risks, larger banks are expected to challenge both types of risks, as size is expanded and profitability is increased (Bashir, 1999). In the same context, Haron (1996a) establish that when the relationship between Islamic banks and size exist, it proved to have an inverse relationship with profitability measures.

5.3.9. Bank Type

The effect of bank type on performance is viewed from two perspectives: ownership and specialisation. Studies that focus on the relationship between bank ownership and profitability are conducted either with focus on state, private or foreign ownership. An example of such studies includes Short (1979), Bourke (1989), Molyneux and Thornton (1992) and Haron (2004), Matthew and Esther (2012), Al-Tamimi and Jellali (2013) and Hassan *et a*l., (2013).

Given that foreign banks operating in Sudan do not publish their statements on their websites and often do not divulge their financial report to the public, this study focuses on the relationship between profitability and local private/state bank ownership.

On the other hand, studies that focus on the impact of bank specialisation on bank profitability are rare, but they can still be seen in Maudos *et al.*, (2002), Naceur and Goaied (2008) and Heffernan and Fu (2010).

According to studies on the relationship between ownership and profitability, two firms may differ in their financial performance depending on whether the majority of the stake in a firm is held by the government, private individuals or mutual funds. Reasons behind the relationship between performance efficiency level and ownership have also been broadly explored. Altunbas *et al.*, (2001) and Flamini *et al.*, (2009) report that justifications for these different performance level lie in imperfectly designed incentives. Altunbas *et al.*, (2001) explain that the lack of capital market regulation, which weakens owners' control over management and consequently gives the management more chance to practise its own agenda, lessens the incentives to be efficient. Goddard *et al*., (2004) explain these conflicts of interest between owners and managers by an example of their difference in opinions on profitability and risk. They report that while owners aim to maximize profit, managers will try to sacrifice profit to reduce risk by investing in more secure investment.

In the traditional banking context, Flamini *et al.,* (2009) report that due to government commitment, public banks may have objectives other than profit maximization. This has also been supported by Athanasoglou *et al., (*2005) who argue that public banks' low level of profitability is because of the banks' social mandate, which differs from profit maximizing. Therefore, privately owned banks may excel over state-owned, with regards profitability.

In the same context, extensive empirical evidence supports the hypothesis that state-owned banks perform less efficiently than private banks. Iannotta *et al.*, (2006) establish that in spite of their lower cost, government-owned banks achieve a lower profitability than privately-owned banks. They also prove that government-owned banks experience poorer loan quality and higher insolvency risk than privately-owned. In his cross-country study, Short, (1979) suggests state-owned banks are less profitable than their privately owned counterparts on the ground that government banks are non-profit oriented banks.

On the other hand, Micco *et al.,* (2007) finding shows it is not an established fact that state-owned banks are less profitable than private banks. Their findings are in line with Altunbas *et al.,* (2001) who prove that, in the case of Germany, there is no evidence that privately owned banks are more efficient than public and mutual banks. Meanwhile,

Molyneux and Thornton (1992) suggest that state-owned European banks generate significantly higher profitability than their private counterpart.

Turning to the second strand of literature on bank type, which focuses on the impact of specialisation on bank performance, Maudos *et al.*, (2002) believe that specialised banks have the requirement to excel in the industry in which they operate. They justify their opinion based on the fact that specialised banks are able to benefit from their financial production or from their better market power of pricing resulting from its productive specialisation. They report that revenues resulting from such prices are able to compensate for any higher costs incurred. In contrast, Heffernan and Fu (2010) report that specialised banks may lose profit opportunity because of their limited areas of investment.

Findings on practical studies on the impact of specialisation on bank performance are also different. Maudos *et al.*, (2002) prove that the type of banking specialisation is not significant in explaining the profitability of European banks. Meanwhile, findings of Heffernan and Fu (2010) prove a positive and significant impact of specialisation on ROE and insignificant impact on ROA in Chinese Rural Banks. Further to the researcher knowledge, there is no study on the relationship between Islamic bank profitability and specialisation, yet, in the context of Arab countries referencing can only be linked to Naceur and Goaied (2008) who study the impact of specialised banks (agriculture and real estate) within Tunisian Banking Industry. They prove no relationship between specialisation and profitability of these banks.

5.3.10. Bank Age

Findings on the impact of bank age on the financial performance of banks are contradicting. Aburime (2008) reports that newly founded banks are not operationally profitable in the first few years after their establishment. He justified these low profitability by mentioning that these banks have been placing greater focus on raising their market share, than on increasing their profitability. Beck *et al*., (2005) and Beck and Kunt (2006) report another reason for the excellence of old age banks over the newcomers. They report that due to their experience, longer established bank seems to be more able to enjoy higher performance and good reputation advantages over the comparatively newly established bank. Yet, their results for the Nigerian market prove

that older banks are financially less profitable as newcomers prove their ability to engage in new profit opportunities. This contradicted with later findings of Dietrich and Wanzenried (2009) who established that bank age does not have a significant impact on the profitability of banks located in Switzerland. They prove that higher reputation of old banks does not have an effect on the banks' profitability. Newly founded banks, if well established, are able to effectively create new profit opportunities.

5.3.11. Commitment to PLS versus non-PLS

As has been mentioned in the previous chapter, Islamic modes of finance can be divided into PLS and/or non-PLS modes of finance. Previous literature on this determinant can be found in studies such as Haron (1996a), Samad and Hassan (2000) and Bashir (2003). Samad and Hassan (2000) establish that PLS modes of finance are less profitable and not popular in Malaysian Islamic banking when compared with the alternative modes of financing which are found to be more profitable and less risky than Mudharabah and Musharakah. Additionally, Haron (1996a) and Haron (2004) prove that funds invested in PLS modes of finance have an inverse relationship with profitability. He suggests that increase in these modes of finance will not generate immediate returns to the bank as the calculation of profit usually takes place either upon completion of a project or after a one-year period from the start point. Consequently, any increase in the PLS investments is instantly followed by a reduction in profitability.

Turning to non-PLS, present in Morabahah, Haron (2004) prove a positive but insignificant relationship between Morabahah and Islamic banks profitability. He reports that Islamic banks normally concentrate their financing activities in Morabahah. He argues that as this mode of financing is short-term in nature, it produce less profit compared to long term investment. Consequently, any increasing amount of Morabahah investment will not increase Islamic banks profitability.

5.3.12. Commitment to the agricultural sector (Salam)

It has been mentioned in the previous chapter that Salam is an advance contract of purchasing agricultural production.

Islamic banks need to take extraordinary care when dealing in Salam operations as they may face a number of risks. Firstly, Counterparty Risk is a common risk in this type of finance as the client may possibly default after taking the payment in advance. Secondly, at the time the goods are received by the bank, the price may become lower than the expected price, creating commodity price risk. Thirdly, sometimes the quality of delivered commodity is not of desired quality, which makes it inadmissible for the prospective buyer. Fourth, the bank may not be able to sell the goods at the right time, leading to locking funds in the goods until they are sold, entailing possible extra storage expenses.

In order to avoid or manage the above-mentioned risks, banks need to be extra cautious when signing any contract of Salam. Such caution mean entering in Salam only when goods have decent market potential. Also, the policy of penalty charges to the supplier could be applied in the case of delayed delivery, to protect the bank from a late delivery cost.

Using the case of the Pakistan banking sector, Kaleem and Wajid (2009) explore the possible application of Salam as an alternative source of agriculture financing under Islamic banking in Pakistan. Interestingly, they find that none of the financial institutions in Pakistan offer Salam mode of finance to their customers in spite of the fact that about 70 percent of farmers need money for purchasing crops inputs, paying for labour and renting machinery.

The last two (PLS vs non-PLS) and Salam contract variables examine part of the impact of asset structure of Sudanese Islamic banks on their profitability.

The next chapter will introduce previous practical findings of studies on profitability determinants of both conventional and Islamic banking industries.

Chapter Six

Research Methodology

6.1. Introduction

There are three approaches that have been used in previous literature to measure and evaluate bank performance. These are – the survey approach, parametric and non-parametric approaches. The survey approach is usually used when studies aim to find perceptions of individuals on the financial performance of their banks. This type of approach has been used by Berger and Humphrey (1997) and Williams and Gardiner (2003).

An explanation of the parametric and nonparametric approaches was given by Tanya (2014), who note that they represent two broad classifications of statistical techniques. He also reports that the difference between the parametric and nonparametric approach is that parametric tests are based on the assumption that the parameters or the shape of the examined data set are approximately normally distributed. This approach uses either the linear regression model or other statistical tools such as algorithm statistical analysis and Beta distribution analysis. Linear regression analysis, in this aspect, remains the most frequently used starting point for any analysis. Short (1979), Molyneux and Thornton (1992), Naceur (2003), and Athanasoglou *et al.*, (2005) are all examples of studies that utilise linear parametric methods, with a focus on performance determinants.

On the other hand, nonparametric tests, as explained by Tanya (2014), do not rely on assumptions about the distribution of the parameters or the shape of the examined dataset. Therefore, it is usually used when the data has an indefinite or non-normal distribution. The non-parametric approach, according to Pettitt (1979), can be subdivided into two methods: Data Envelopment Analysis (DEA) and Free Disposal Hull (FDH). Within this technique, DEA is the most applicable method in studies which focuses on the banking sector. Examples of studies that have used non-parametric methods include Fu and Heffernan (2007) and Yao *et al.*, (2007). Overall, choosing between these types of methodology depends on one's study objectives.

The general consensus in the area of performance determinants reveals that the widely used linear parametric econometric approach form is the relevant functional form for examining the determinants of bank performance. Studies such as Short (1979), Bourke (1989), Molyneux and Thornton (1992), Bashir (2000), Naceur (2003), Hassan and Bashir (2003), Goddard *et al*., (2004) and Athanasoglou *et al.*, (2005) prove that the linear regression form is widely used in the literature to estimate the impact of various factors that may be important in explaining bank profits. These studies also provide evidence that the linear regression estimation produces reliable findings that are equal to any other functional form.

Following previous studies' methodology, the study uses linear regression to assess the financial performance of Sudanese Islamic banks. As the main focus of this study is evaluating the main performance determinants of Sudanese Islamic bank, the researcher uses a linear regression model to investigate the relationship between the performance determinants and performance measures. This chapter aims to explain the methodology of the study, including the sample size, the econometrics techniques employed, and a brief explanation of the variables.

To achieve the study objectives, the researcher builds three models of performance measures and determinants. These models have been extensively used in to examine the interrelation between financial performance measures, presented in profitability measures as dependent variables, and profitability determinants, which are the independent variables. Through this process, the researcher becomes able to identify which variables are important in shaping banks' profitability and risk in the Sudanese banking industry.

6.2. Data and Sample

The study uses secondary data sourced from twenty-seven Sudanese Islamic banks' financial statements, particularly the balance sheet and the profit and loss statement, during the period from 2005 to 2013. The sample represents the major Sudanese banks that have consistently published their financial statements over the study period. This data were collected either from the bank websites or as hard copies directly from the banks' headquarters and branches.

The financial statements are used because the banks' balance sheet items are viewed to typically reflect the bank's management behaviour in terms of policies and decisions that relate to the bank's funds sources, composition and utilisation. Additionally, a bank's profit and loss statements are seen to reflect the management's effectiveness in creating revenues and managing costs. Data from the income statement are relevant for identifying the interrelationship between performance measures and determinants.

The study uses the panel estimate approach, which is used in financial modelling when the data has both time series and cross-sectional elements: such data are often referred to as longitudinal data. Using panel data has the great advantage of enabling researchers to capture dynamic changes and help investigate behavioural model over a specific period of time for different units. Baltagi (2003), Gujarati (2004), Hsiao (2005) and Brooks (2008) support this advantage by arguing the effectiveness of panel data in detecting interrelationship between variables. They note that using panel data enables researchers to study a more complex, as well as a wider, range of factors than would be possible with pure cross-sectional data or time-series data. Secondly, the assumptions of panel data, they assert, allows for individual specific variables, thus taking the unit's heterogeneity into account. Thirdly, panel data, they claim, examines the dynamic change of the relationships between variables of large numbers of entities over the same time: such findings, they contend, usually requires data over a longer period of time so as to have an adequate number of observations, if a pure time series data are used. Fourthly, when using a broad aggregation of panel data, they note that the panel approach can still be effective as it minimises the bias that may appear due to such broad aggregation. Fifthly, they explain that panel data can spot and measure the influence of variables that cannot be detected in pure time series data or pure cross section. Finally, they conclude that panel data provides more data variability, more degrees of freedom, less collinearity of variables, more informative data, and extra efficiency and increases the ability to effectively study more complicated behavioural models.

Therefore, the use of panel data, as grounds for data analyses, provides a rich environment for the researcher to more closely examine the evaluation of the impact of profitability determinants on the performance of Sudanese Islamic Banks.

Finally, the study used EViews software for running the data analysis and yielding regression findings. Brooks (2008) reports that EViews provides an effective tool most frequently used in practical econometric studies such as cross-section, time series, panel data analysis and general statistical analyses and estimation. He also reports that, importantly, EViews software is able to discover any model misspecification and, therefore, it can consider a wealth of diagnostic tests to automatically identify whether the model is econometrically valid or not. Therefore, the researcher considers this software as an ideal package to estimate the interrelationship between performance measures and determinants.

6.3. Econometric Techniques

Following Short (1979), Molyneux and Thornton (1992), Bourke, (1989), Naceur and Goaied (2008) and others, the study uses the linear functional form which is widely used in the literature and well-known for producing good results. The study utilises different econometric techniques of linear functional form to achieve its aims. This section provides a brief explanation of each econometric technique.

6.3.1. The Pooled Estimation Method

The estimation of pooled data became one of the most popular econometric methods in literature because of the fact that pooled data affords such a rich environment for the development of estimation techniques (Greene, 2003 and Brooks, 2008). The pooled regression, according to Brooks (2008), entails estimating a single equation on different cross-sectional data.

The pooled estimation model can be expressed in the following regression equation:

$$Yit = \alpha + \beta Xit + uit \qquad (1)$$

Where:

Yit: is the dependent variable.

α: is the intercept term.

β: is the vector of coefficients.

Xit: is the vector of explanatory variables.

uit: is the error term (the disturbance term).

t = time period 1, …..,T

i = vector coefficient of X regressors 1, . . . , N

The main assumption on which the pooled method is based is that the average value of explanatory variables (Xit) are not stochastic (fixed). Further, the method assumes that the intercept term and the coefficients of all the explanatory variables have constant values over time and across the entities. Guru *et al.*, (2002) report that this is an important assumption as, if the slopes were to differ over time as well as cross-sectionally, then each separate cross-sectional regression would involve a distinct model and pooling would be inappropriate.

The equation will be estimated using the usual Ordinary Least Squares (OLS). OLS is a well-known method for forecasting approximate estimates for the unknown parameters in a linear regression model. In other words, it estimates the sum of the vertical distances between each data point of the study's dataset and the parallel point on the regression line. The smaller the differences between the estimated point and the parallel point, the better the model fits the data.

The use of pooled data has a number of advantages that makes it central to quantitative studies that focus on identifying the relationship between variables. These advantages, as Podestà (2002) puts, are as follows:

- Pooling data allows testing of the influence of a wider range of factors as well as offering more degrees of freedom and more efficiency.
- Pooling data provides higher variability of data compared to a time series or cross-section design research.
- Instead of only testing the impact of a cross-section of all variables at a point in time, or only testing a time series model for several entities using only time series

data, a pooling data allows the combination of these methods to achieve more informed and wider understanding.

In contrast, Gujarati (2004) and Brooks (2008), highlight that the limitations of pooled data analysis lay in its implicit assumption that the average values of the variables and the relationships between them are regular over time and over all of the cross-sectional units in the sample. Gujarati (2004) report that these assumptions are restrictive. Therefore, despite its simplicity and the advantages of this method, pooling data may affect the relationship between variables. Brooks (2008) argue that this can be dealt with by estimating separate time-series regressions for each institution, yet this would not take into consideration any regular structure which could be of interest to the researchers. Alternatively, estimates may be made of separate cross-sectional regressions for each of the time series, but again this is likely to be a sub-optimal way to proceed because it will not consider the common distinction in the series over time. Accordingly, Pooling data remains one of the most widely used methods to estimate the interrelationship between performance measures and determinants.

To find out whether pooling data is the appropriate method for investigating the interrelationship between the performance measures and determinates of Sudanese Islamic banks, the researcher uses panel regression to estimate the relationship between dependent and independent variables.

6.3.2 The Panel Estimation Method

The panel model is stated below:

$$Yit = \alpha + \beta Xit + uit \qquad (2)$$

Where:

Yit: is the dependent variable.

α: is the intercept term.

β: is the vector of coefficients.

Xit: is the vector of k explanatory variables.

uit: is the error term (the disturbance).

t = time period 1, …..,T

i = vector coefficient of X regressors 1. . . N

In the literature, there are two kinds of panel estimator approaches used in financial research: fixed effects models (FEM) and random effects models (REM). In this study, the researcher employed at least one of these models to test their efficiency in estimating the interrelationship between the profitability measures and determinants. A brief explanation of the two estimators is the major focus of the following two sections.

6.3.2.1. Fixed Effects Model (FEM)

This model assumes that there are different average intercept terms for each company and that these intercepts are constant over time. In other words, the intercept can have a different value across sectors, but, for each sector, the intercept does not vary over time (time invariant). In addition, the relationships between the explanatory and explained variables are assumed to be the same both cross-sectionally and over time. Furthermore, the model proposes that the slope coefficient is constant across companies. With regards to the error term μit, the model assumes that it varies over time and across entities, encapsulating everything that remains unexplained *yit*. μt is assumed to capture any unexplained differences over time while μi captures variations over companies *(*Brooks, 2008).

The fixed effect model can be explained by the following equation

$Yit = \alpha + \beta it + \mu it$ (3)

Where:

Y*i*t: is the dependent variable.

α: is the intercept term.

β: is the vector of coefficients.

Xit: is the vector of k explanatory variables.

μit : individual specific effect.

t = time period 1, …..,T

i = vector coefficient of X regressors 1, . . . , N

When testing for FEM, we test the following hypothesis:

H0: $\mu 1 = \mu 2 = \cdot \cdot \cdot = \mu N$

H1: $\mu 1 \neq \mu 2 \neq \cdot \cdot \cdot \neq \mu N$

If the null hypothesis is accepted, it implies that the data can be pooled together and the Ordinary Least Squares (OLS) method employed to estimate the pooled regression. If the null hypothesis is rejected, however, then it is not convincing to accept the assumption that the intercepts are the same across the cross-sectional units, which means H1 will be accepted and consequently the panel approach must be employed.

At this point, it would be worth noting that the assumptions of fixed effects models are the same as for pooled models, except for the intercept which may differ across the banks, according to the fixed effects models, whilst remaining constant in the pooled models.

The FEM model has the advantage of its ability to capture all time-invariant effects that are explicit to an individual sector or company. It is also effective when the study considers factors such as ownership and size since such factors do vary between individual entities but not over time. Finally, it allows for using a large number of dummy variables, which have been widely and reliably used in econometric research to measure the attributes of temporal effects, qualitative variables, and quantitative variables.

In spite of the great advantages of the FEM, it can still be criticized for some drawbacks. Gujarati (2003) asserts that the main disadvantage of this model appears when it is applied to too many variables: this, he note, results in weakening the degree of freedom and increasing the probability of multicollinearity. He further reports that the fixed effect approach may not be able to detect the influence of time-invariant variables such as ethnicity, sex, and colour.

To overcome the FEM problems, the random effects model can be used. At this stage it may be worth mentioning that to choose between pooled and FEM, the likelihood test should be used to test the null hypothesis. If the null hypothesis accepted, this means that FEM is not suitable and, in that case, we accept the pooled estimation method. In contrast, if the null hypothesis is rejected, this means that FEM is suitable for estimating the model variables, and is thus accepted.

6.3.2.2 Random Effects Model (REM)

Random Effects model (REM), or error components model, is a substitute alternative to the FEM. Brooks (2008) reports that, as with fixed effects, the REM suggests different intercept terms for each company and that these intercepts are constant over time. Again, the relationship between the explanatory and explained variables is assumed to be the same both cross-sectionally and over time. Unlike FEM, under REM, the error element is a random disturbance that is constant for every observation in a specified sample (for a given bank) but is random across samples. The individual particular disturbance is only one component of the total disturbance term.

Brooks (2008) explains this model by reporting that the error term (disturbance term *uit)* can be divided into individual specific effects μi, and the 'remainder disturbance' *vit*. The 'remainder disturbance' varies over time and encapsulates all remaining unexplained errors about (*yit*). Therefore, the error term can be written as

$uit = \mu i + vit$

Brook (2008) also explains the implications of this assumption by stating that instead of dealing with α as fixed, the model assumes that the intercepts for each single cross-sectional unit are raised from a common intercept α (which is equal for all cross-sectional units and over time) plus a random variable v*i* that varies across cross-sectional entities but is still constant over time. Therefore, v*i* quantifies the random deviation of each cross section's intercept term from the overall intercept term α for all the individuals. Gujarati (2004) reports that individual error components are assumed not to be correlated together and are not auto-correlated through neither time series nor cross-sectional entities.

REM can be explained by the following equation

$yit = \alpha + \beta xit + \mu i + vit$ (4)

Where:

Yit: is the dependent variable.

α: is the intercept term.

β: is the vector of coefficients.

Xit: is the vector of k explanatory variables.

μi: the random error term presented in individual specific effect or,

vit: the 'remainder disturbance' presented as an unobserved bank-specific factor.

t: time period 1, …..,T

i: vector coefficient of X regressors 1, . . . , N

Gujarati (2003) also states that the Generalised Least Square (GLS) is applied to estimate the REM, as it takes into account the different correlation structure of the error term in the REM. If this correlation is not taken into consideration and REM is estimated by OLS, the findings will be inefficient.

As with all approaches to analysis, the REM has a major drawback due to its nature to only be suitably applied when the disturbance term uit (both μi and vit) is uncorrelated with all of the explanatory variables. Therefore, REM is suitable to use only if the composite error terms are uncorrelated. Otherwise, FEM model is preferable (Brooks 2008).

To get the final answer on the nature of the relationship between the variables, in other words, to validate either the FEM or the REM, Hausman's test is used to identify the hypothesis that needs to be applied. If the null hypothesis is rejected, this means that the REM is not suitable and, in this case, we accept the FEM. In contrast, if the null hypothesis is accepted, this means that the REM is suitable for estimating the model variables and should be accepted.

In addition, when applying the panel data technique, we have two alternatives: balanced panel or unbalanced panel techniques. According to Gujarati (2004), if each cross-sectional entity has the same number of time series observations, then this type of panel data is called a balanced panel. On the other hand, if the number of observations varies among panel entities, this type of panel data, Gujarati explain, is called an unbalanced panel. As the number of observations among Sudanese Islamic banks is varied, this research uses unbalanced panel data.

It may be worth mentioning that, as with any other type of methodology, panel data techniques have some limitation. Brooks (2008) states that the limitation of panel data is due to the average values of the variables and that the relationship between the dependent and independent variables is assumed to be constant both over time and over all of the cross-sectional units in the sample. This is the case even if the varying value of the intercepts allow the average values to be different. However, he reports that using panel data technique remains a better option than estimating separate time-series regressions for each entity or estimating separate cross-sectional regressions for each period of time. Accordingly, the efficiency gains from using panel data compensate for any bias that may occur from the estimated parameter.

6.4 Model Specification

Based on the previously mentioned explanation of pooling and panel estimation approaches, the researcher create the following three models which she uses to investigate the impact of profitability determinants on ROA and ROE of Sudanese Islamic banks.

The first model applies the pooled regression method on the examined dataset. This model implies that the average value of the independent variables, the intercept term and the coefficients of all the explanatory variables are constant over the study period (2005-2013) and across the 27 Sudanese Islamic banks. This model is represented as follows:

Eq. 1.1. ROA as the dependent variable –

$$ROAit = \alpha + \beta Typeit + \beta Ageit + \beta Specialisedit + \beta Totassit + \beta Capad1it + \beta Liq2it + \beta Credr1it + \beta Lever2it + \beta Over2it + Mgt1 + \beta Assut1it + \beta PLSit + \beta Murabit + \beta SLMit + uit$$

Eq.1.2. ROE as the dependent variable –

$$Bank\ ROEit = \alpha + \beta Typeit + \beta Ageit + \beta Specialisedit + \beta Totassit + \beta Capad1it + \beta Liq2it + \beta Credr1it + \beta Lever2it + \beta Over2it + Mgt1 + \beta Assut1it + \beta PLSit + \beta Murabit + \beta SLMit + uit$$

Where

t = time period 1, ...,T, (2005-2013)

i = vector coefficient of 1, *2, 3 . . . , N*, where N= 27 banks

The second model applies the Fixed Effect Model. It assumes that there are different average intercept terms for each Sudanese Islamic banks and that these intercepts are constant over time. Furthermore, the FEM proposes that the slope coefficient is constant across the 27 banks. It also assumes that the error term μit is varied over the study period and across the 27 banks, encapsulating everything that remains unexplained and affects ROA and ROE. Accordingly, the equation can be written as follows:

Eq.2.1. ROA as the dependent variable –

$$Bank\ ROAit = \beta Credr1it + \beta Lever2it + \beta Over2it + Mgt1 + \beta Assut1it + \beta PLSit + \beta Murabit + \beta SLMit + \mu it$$

Eq. 2.2. ROE as the dependent variable –

$$Bank\ ROEit = \beta Credr1it + \beta Lever2it + \beta Over2it + Mgt1 + \beta Assut1it + \beta PLSit + \beta Murabit + \beta SLMit + \mu it$$

Where:

t = time period 1, ...,T, (2005-2013)

i = vector coefficient of 1, *2, 3 . . . , N*, where N= 27 banks

When testing for FEM, we test the following hypothesis:

H0: $\mu 1 = \mu 2 = \cdots = \mu N$

H1: $\mu 1 \neq \mu 2 \neq \cdots \neq \mu N$

The third model applies the Random Effects Model. It assumes that there are different intercept terms for each Sudanese bank and that these intercepts are constant over time. Again, the relationship between the explanatory and explained variables is assumed to be the same both cross the 27 Sudanese banks and during 2005-2007. It also assumes that the error element is a random disturbance that is constant for every observation in each bank but is random across the Sudanese banks. The individual particular disturbance is only one component of the total disturbance term. In other words, the disturbance term uit is divided into individual specific effects μi, and the 'remainder disturbance' vit. The 'remainder disturbance' for Sudanese banks is assumed to be varied during the study period and encapsulates all remaining unexplained errors about ROA and ROE. The equation can be written as follows:

Eq. 3.1. ROA as the dependent variable –

$$Bank\ ROAit = \beta Credr1it + \beta Lever2it + \beta Over2it + Mgt1 + \beta Assut1it + \beta PLSit + \beta Murabit + \beta SLMit + \mu i + vit$$

Eq. 3.2 ROE as the dependent variable –

$$Bank\ ROEit = \beta Credr1it + \beta Lever2it + \beta Over2it + Mgt1 + \beta Assut1it + \beta PLSit + \beta Murabit + \beta SLMit + \mu i + vit$$

Where:

μi : the random error term presented in individual specific effect or,

vit : the 'remainder disturbance' presented as an unobserved bank-specific factor.

Table 6.1 provides a full set of variables and their notions, as used in the models.

Table 6.1: Variables and Notions

Variable name	**Notion**
Return on Assets	ROA
Return on Equity	ROE
Bank Type	Type
Bank Age	Age
Specialisation	Specialised
Size	Totass
Capitalisation	Capad1
Liquidity	Liq2
Credit Risk	Credr1
Leverage	Lever2
Operational efficiency	Mgt1
Staff expenses	Over2
Assets Utilisation	Assut1
Profit and Loss Sharing	PLS
Non-Profit and Loss Sharing	Murab
Salam	SLM

6.5. Operational Definitions of the Variables:

This section specifies the operational definition of each variable included in the analyses.

6.5.1. The Dependent Variables

Dependent variables presented, ROA and ROE, are used to measure bank profitability. Although there are other profitability measures, such as net interest margin and return on capital, such measures are not used in this study, either because they are insignificant for the study objective, which aims to gain a comprehensive insight view of general performance measures, or because they are not applicable to Islamic banking industry. The following are operational definitions and justification for each profitability measure.

6.5.1.1 Return on Assets (ROA):

As mentioned, ROA is measured by dividing net after taxes income over total assets. It has been chosen as a profitability measure because it represents a general and comprehensive measure of bank profitability and overall performance. In addition, it echoes bank capability to achieve a return from its total operations on its sources of funds. Therefore, it reflects the management's ability to utilise the banks' financial resources to create profits.

6.5.1.2. Return on Equity (ROE)

Return on Equity is measured by dividing the banks' net after taxes income by its total equity. It represents a measure of how much profit a bank has generated on funds supplied by shareholders. In other words, it expresses the profit earned per unit of currency of equity.

Bashir (1999) and Alkassim (2005) report that ROE reflects the efficiency of bank management in using shareholders' investment. Samad and Hassan (2000) report that the higher the ROE, the more competent is the managerial performance and consequently bank's performance.

It may be worth mentioning that using ROA and ROE as profitability measures gives deeper integrated measures covering both management efficiency and shareholders' and regulators' interest. This will certainly create a comprehensive picture of the performance of Sudanese Islamic Banks.

6.5.2. The Independent Variables

Literature divides explanatory variables into three different categories, namely bank-specific determinants, industry specific determinants and macroeconomic determinants of commercial bank profitability (see Guru *et al.*, 2002 and Dietrich and Wanzenried (2009). As this study focuses on a single country, the researcher excludes the macroeconomic variables. This is due to the fact that such variables gain more importance when undertaking multi countries study where the macroeconomic determinants and consequently the economic conditions are varied. Accordingly, this study focuses on bank-specific and industry-specific determinants. Bank specific determinants are

capitalisation, liquidity, credit risk, leverage, operational efficiency, staff expenses, assets utilisation, profit and loss sharing, non-profit and loss sharing and Salam mode of finance. The last three determinants are related to Islamic banking industry only, as traditional banks do not invest their money in such modes of finance. In contrast, industry specific determinants are bank size, bank age and bank type. As has been mentioned in the literature review, bank type examines the impact of ownership and specialisation on the performance of Sudanese Islamic banks. The following is the operational definition of each variable:

6.5.2.1. Capitalisation

Following Kunt and Huizinga (1999), Guru *et al., (*2002), Flamini *et al.,* (2009), Karim *et al.*, (2010) and Qudah and Jaradat (2013), the researcher uses total equity to total assets as main capitalisation measure. This measure is chosen because it gives broader meaning for capitalisation than capital to assets ratio. This is because total equity to total assets takes into consideration total reserve. However, following Chirwa (2003) and Goddard *et al.*, (2004), capital to assets ratio is used for robustness test so as to assert the finding from total equity to total assets.

6.5.2.2. Liquidity

Following Samad and Hassan (2000), the study uses the most popular liquidity ratio, current assets to current liability, as a proxy for liquidity measure. By choosing this measure the researcher focuses on the relationship between the ability of banks to pay their current liability from current assets on the one hand, and banks' profitability on the other hand. Current assets are defined by this study as cash, cash equivalents, marketable securities, receivables and inventory. Meanwhile, current liabilities cover notes payable, current portion of term debt, payables and accrued expenses. Additionally, following the same study of Samad and Hassan (2000), the study uses current assets to total assets for robustness test to ascertain findings from current assets to current liability ratio.

6.5.2.3. Credit Risk

Following Ali *et al.,* (2011), loan loss provision to total loan is used as a proxy for credit risk in the main model. For robustness check, the study follows Hassan and Bashir (2003),

who use loan loss provision to total assets. It may be worth mentioning that although a non-performing loan is a better measure of credit risk, Sudanese Islamic Banks do not disclose data on this item, which makes it impossible for the researcher to use it. Nevertheless, loan loss provision based measures are still a good indicator for credit risk as they represent the amount created by banks to meet non-performing loans. Creation and any adjustment of loan loss provision are based on the amount of non-performing loans. Accordingly, measures based on loan loss provision are reliable, as well as widely used, in literature.

6.5.2.4. Leverage

To measure leverage of Sudanese Islamic Banks the study follows Bashir (2003) who uses total liability to total assets. This ratio is chosen because it is a more comprehensive measure of leverage than the long-term liability to total equity ratio. Nevertheless, the study also follows Samad and Hassan (2000) by using long-term liability to total equity for robustness check.

6.5.2.5. Operational Efficiency

Total cost to total income is used to measure management efficiency, because of the relevant relationship between the numerator and denominator. For robustness check, the total cost to total assets is used, as have been widely used in the literature (see Haron, 1996; Guru *et al.*, 2002; Athanasoglou *et al.*, 2006; Srairi, 2009; Ben-Khedhiri, 2009 and Heffernan and Fu, 2010).

6.5.2.6. Staff Expenses

Following Naceur (2003), Bashir (2003), Alkassim (2005) and Izhar and Asutaya (2007), this study uses the ratio of salaries to total expenses to measure and assess the impact of overheads expenses on the profitability of Sudanese Islamic banks. Overheads expenses consist of staff expenses, which comprise salaries and other employee benefits including staff training and expenses related to pension. Overheads to total expenses are used in the main model because of the relevant relationship between the two expenses. However, as human resources are considered an asset, the study also follows Bashir (2003), Izhar and Asutaya (2007) and Ben Naceur and Goaied (2008) who all use overheads to total assets, which this study will use for robustness check.

6.5.2.7. Assets Utilisation

The study uses total income to total assets to measure assets utilisation. Although operating income to total assets, which is used by Hassan and Bashir (2003) and Ali *et al.*, (2011), is a better measure for assets utilisation, the researcher was unable to use it. This is due to the reason that Sudanese banks are neither disclose the value of their operating income nor follow a consistent way in presenting their financial data, which limits the researcher's ability to calculate this figure. However, total income to total assets is still able to reflect how effective a bank management is in the use of their assets.

6.5.2.8. Profit and Loss Sharing vs Non-PLS

To identify a suitable ratio for measuring the contribution of each type of finance, the researcher follows Samad and Hassan (2000) who use the ratio of Mudaraba-Musharaka/Total Investment to measure Malaysian Islamic banks' commitment to the economy. Yet the denominator of this ratio seems to need some adjustments for two reasons. Firstly, total investment is so large when comparing it with the numerator. Therefore, calculating the ratio following Samad and Hassan (2000) will lead to ultrafine (very small) values. Secondly, the total investment seems to be so general with the study aim, which is the comparison between the two types of finance in the context of the total modes of finance, not the total investment that the banks deal with.

Therefore, the researcher uses the ratio of PLS modes of finance (Modarabah and Mosharakah) to total modes of finance, and the ratio of Morabahah to total modes of finance, to measure the impact of each type of finance on the profitability of Sudanese Islamic Banks. Calculating the ratio this way makes the measure more specific as well as helping in realising the research aims.

6.5.2.9. Commitment to the Agricultural Sector (Salam)

It has been mentioned previously that Salam is an advance contract of purchasing certain agricultural production. As it is well known that Sudan has extended fertile lands and climatic environment suitable for cultivation, the study aims to discover to which extent the Sundanese banking industry benefits from, and serves, the agricultural sector. Following the same above argument on choosing the total mode of finance as the

denominator, the researcher uses the ratio of Salam to total modes of finance to measure and assess the impact of this mode of finance to the profitability of the studied banks.

6.5.2.10. Bank Size

To measure the impact of bank size, the researcher relies mostly on the finance literature that uses total assets of the banks as a proxy for bank size (see Chirwa, 2003; Holden and EL-Bannany, 2004 and Dietrich and Wanzenried 2009).

6.5.2.11. Bank Age

Following Dietrich and Wanzenried (2009) the researcher classifies banks into three different groups according to their age. The first group consists of oldest banks group, which consists of seven banks, all founded before 1983. The second group is the middle age banks group and contains fourteen banks, which are those found between 1984 and 1999. The third group is composed of newly established banks and consists of six banks which have been established after 2000.

6.5.2.12. Bank Type

The model of this study investigates the relationship between bank type in terms of ownership and specialisation.

In terms of ownership, the model investigates the relevance of bank ownership, whether private or state-owned, to the profitability of the Islamic banks studied. Banks are classified as state or private banks according to the percentage of shares acquired by the owner. 50% has been used as the border percentage in this classification. Accordingly, a bank is considered as a state bank when the public sector owns 50%, and above, of their shares, and vice versa. Table 6.1 shows the number of each type of banks according to this classification. In all, there are 10 state banks and 17 private banks.

Table 6:2 Classification of Banks Under-Study, 2005-2013

Bank type	Number of banks	%
State banks	10	37%
Private banks	17	63%
Total	27	100%

To measure the impact of ownership on the profitability of Sudanese Islamic Banks, the study uses a dummy for ownership variable. Accordingly, a dummy value of zero is used when a bank is a state bank, whilst dummy of one is used when a bank is private.

To find out whether specialised or non-specialised banks are more profitable, the researcher also follows Heffernan and Fu (2010), who use dummy value of 2 when the bank is not specialised and dummy value of three when the bank is specialised.

To sum up, Table 6.3 provides a full set of variables, with their measures and notions, as used in the model estimation.

Table 6.2: Variables, Measures and Notions

Variable name	Measure	Notion
Return on Assets	Net profit to Total Assets	ROA
Return on Equity	Net profit to Total Equity	ROE
Bank Type	Dummy Variable	Type
Bank Age	Dummy Variable	Age
Specialisation	Specialised	Specialised
Size	Dummy Variable	totass
Capitalisation	Total Equity to Total Assets	Capad1
Liquidity	Current Assets to Current Liability	Liq2
Credit Risk	Loan Loss Provision to Total Loan	Credr1
Leverage	Total Liability to Total assets	Lever2
Operational efficiency	Total Cost to Total Income	Mgt1
Staff expenses	Overhead to Total expenses	Over2
Assets Utilisation	Operating Income to Total Assets	Assut1
Profit and Loss Sharing	Musharakah and Modarabah to Total modes of finance	PLS
Non-Profit and Loss Sharing	Morabahah to Total Modes of Finance	Murab
Salam	Salam to Total Modes of Finance	SLM

Finally, it may be worth mentioning that sometimes there is no fairly conclusive separation between the variables used. Athanasoglou *et al.*, (2005) state that sometimes there are multicollinearity issues between the variables, which makes some of them principally proxy to the same profitability determinant. They also report that studies on banks' profitability need to reasonably consider these issues so as to gain a better insight into the factors influencing banks' profitability. To reduce such overlapping between variables and create better insight into the impact of each determinant on the performance of the banks, the study uses different measures for robustness check so as to be more able to assert and ascertain the impact of each variable on the performance of these banks.

6.6. Summary

This chapter reviews the methodological approaches that are used to estimate the key determinants of the banking industry in Sudan from 2005 until 2013. It also outlines the three steps and alternatives of parametric linear functional form employed by the researcher to measure the impact of each profitability factor.

Furthermore, this chapter describes the dataset and variables used for the empirical analysis, including the dependent variables presented in profitability measures and the independent variables presented in profitability determinants. The next chapter provides the results of the empirical part of the first model of this study.

Chapter Seven

Empirical Research Findings on Profitability determinants

7.1. Introduction

This chapter provides empirical evidence on the determinants of banks' profitability in the Sudanese Islamic Banking industry. The empirical evidence shows the relationship between profitability, as measured by ROA and ROE, and the targeted profitability determinants. First, the tests are undertaken for the entire sample of Sudanese Islamic Banks. Second, the tests are undertaken for both types of banks: state and private banks. The analyses establish which determinant, amongst the all potential determinants of performance, are important.

7.2. Descriptive statistics

Descriptive statistics provide insights into the characteristics of a studied sample. In Table 7.1, the descriptive statistics for the variables of the entire studied sample are presented. Table 7.2 contains the mean values and standard deviation of all studied variables for state and private banks.

The mean value describes the mathematical average of the variables, while the standard deviation shows the variability in a data set. A smaller standard deviation indicates that the variables in a dataset are much closer to the mean of the dataset; while higher values of standard deviation indicate that the variables in the dataset are more dispersed from the mean value. Table 7.1 also reports the minimum and the maximum values for each dataset.

Table 7.1: Descriptive Statistics of Dependent and Independent Variables for all Sudanese Islamic Banks

Variable Name	Mean	Std. Dev.	Max	Min	No of Obs.
ROA	0.0267	0.0346	0.3141	-0.0896	186
ROE	0.8745	5.5230	57.1907	-0.6215	185
Type	0.6720	0.4707	1.0000	0.0000	186
Age	6.9624	0.6687	8.0000	6.0000	186
Specialised	4.1901	1.1254	5.0000	2.0000	424
Size	1.3400	1.6621	9.17E+09	46978	186
Capad1	0.2262	0.1880	1.0000	0.0000	186
Liq2	1.9632	1.3653	15.250	1.0033	185
Credr1	0.0621	0.0741	0.4072	0.0000	186
Lever2	0.5723	0.1915	0.9799	0.0000	186
Mgt1	0.6877	0.2966	2.7849	0.0983	186
Over2	0.4253	0.1565	1.0738	0.0000	186
Assut1	0.0804	0.0339	0.3619	0.0252	186
PLS	0.3728	0.3242	1.0000	0.0000	172
Murab	0.4525	0.2866	1.0000	0.0000	172
SLM	0.0165	0.0402	0.3074	0.0000	172

Source: calculated by the author from banks' annual reports.

Table 7.1 shows that ROE has remarkably higher mean and standard deviation than ROA. The higher mean of ROE implies that Sudanese Islamic banks, on average, were able to generate higher returns on funds supplied by shareholders than on bank's financial resources. This could be an indication of the impact of leverage on the profitability of these banks.

Furthermore, bank size and liquidity appear to have the highest mean and standard deviation, whilst credit risk, assets utilisation and Salam have the lowest mean and standard deviation. In addition, the table shows that there is a big difference in terms of ROE, bank size, liquidity, operational efficiency and overhead expenses ratio comparing with other variables (as seen from the Min and Max values).

Table 7.2, on the other hand, shows that the mean values of ROA and ROE for Sudanese private banks are higher compared to the mean values of Sudanese State banks: the difference in average is more remarkable when performance is measured by ROE. In addition, the standard deviation for the two sets of banks could be said to be almost identical, especially when profitability is measured by ROA. Furthermore, state-owned banks are characterised by higher standard deviation, when profitability is measured by ROE. Higher profitability of private banks, in contrast to state banks, can be justified by the higher average measures, as presented in Table 7.2. These figures show that Sudanese private banks are characterised by better average performance indicators in almost all determinants.

Table 7.2: Mean Values of all Studied Variables for State and Private Banks

Variable Name	State Banks	Private Banks
ROA	0.0119 (0.0208)	0.0342 (0.0375)
ROE	0.0066 (0.5325)	0.1624 (0.1135)
AGE	6.7119 (0.6446)	7.0800 (0.6551)
Specialised	3.0164 (0.9915)	4.8800 (0.3935)
Size	1.72E+09 (2.15E+09)	1.17E+09 (1.36E+09)
Capad1	0.2053 (0.1890)	0.2378 (0.1883)
Liq2	1.7173 (0.6746)	2.0904 (1.5880)
Credr1	0.0858 (0.0935)	0.0540 (0.0643)
Lever2	0.6226 (0.1817)	0.5472 (0.1930)
Mgt1	0.8379 (0.3443)	0.6091 (0.2335)
Over	0.4187 (0.1959)	0.4264 (0.1353)
Assut	0.0688 (0.0235)	0.0864 (0.0366)
PLS	0.2571 (0.2362)	0.4024 (0.3383)
Murabh	0.5472 (0.2309)	0.4254 (0.2970)
SLM	0.0111 (0.0162)	0.0189 (0.0462)

* Numbers without brackets are the mean values of the variables, whereas numbers in brackets are standard deviations.

From the Table above, it could be interpreted that, since the mean value of the capitalisation ratio is slightly higher for private banks than state-owned banks, private banks are more superior to state-owned banks with regards capital adequacy. This could be seen as reflecting the ability of private banks diversify their business as well as representing a better general financial collateral for private banks. Secondly, the mean value of liquidity ratio of private banks, as presented above, could be seen to be higher than the mean value of the equivalent ratio for state banks. This may be interpreted as indicating that private banks maintain a sufficient amount of liquidity to meet their

ongoing commitments compared to state banks. Thirdly, the mean value of the leverage ratio of private banks is lower than the mean value of state banks. This could also be interpreted to mean that in the case of loss or liquidation, the shareholders of private banks are comparatively more protected than the owners (the state in this instance) of state banks. Fourthly, the mean value of the operational efficiency ratio of private banks is by far less than the corresponding ratio for state banks. This ratio could possibly represent one of the key determinants of the superiority of the performance of private banks over their equivalent counterpart. This is a clear indicator that the management of private banks are able to manage their operational expenses than the management of state banks. Lastly, the mean value of assets utilisation of private banks is higher than the mean value of the equivalent ratio of state banks. This indicates that private banks are more efficient in using their resources than state banks.

The mean values of all studied variables for state and private banks in Table 7.2 also show that the mean values of credit risk are notably higher for state banks than the private one. Although this could indicate that state banks, in average, have a sufficient loan loss provisions against potential losses than their private counterpart, it could also indicate that doubtful debt of state banks often turn into bad debt.

Additionally, the Table shows that the mean value of staff expenses and total assets are almost equal for the two sets of banks. Equality in the mean values of staff expenses may indicate that both types of banks could have the same opportunity to employ a similar level of professionals and expertise (staff). Furthermore, the mean values of PLS, non-PLS and Salam modes of finance show that private banks are more committed to the main principle of Islamic finance (profit and loss sharing) as well as to aiding the agricultural sector. Though the difference in the mean value of Salam mode of finance across both banks could be viewed as insignificant, the mean value of non-PLS mode of finance, as measured by Murabaha, on the other hand, is higher for state banks. This could be interpreted to mean that state banks are more committed to non-PLS modes of finance than private banks.

Finally, the standard deviations for most of the private banks' variables are lower than those for state banks, reflecting that variations among the individual banks are smaller for private banks than those for state banks.

7.3. Estimated Results Using the Pooled Estimation Method for the Entire Sample

In this section of the study, the researcher examines the impact of the set of profitability determinants on the entire sample of Sudanese Islamic Banks, using pooled estimation method. The FEM is proved to be unsuitable for the analysis as the likelihood ratio test shows that the Fixed Effect variable is redundant (insignificant) for the equations (0.5813 for ROA and 0.5251 for ROE). The alternative hypothesis (H1: $\mu 1 \neq \mu 2 \neq \cdots \neq \mu n$) is rejected at 10% and the null hypothesis (H0: $\mu 1 = \mu 2 = \cdots = \mu n$) and the OLS are consequently accepted for the full sample.

Table 7.3 shows the regression results for the two dependent variables (ROA and ROE) using the Poled Estimation Method.

Table 7.3: Estimated Coefficient and their signs for the entire sample

Independent Variables	ROA	ROE
Constant	0.1416*** (0.0282)	-8.1045 (10.246)
Age	-0.0087 *** (0.0027)	0.2158 (0.9742)
Type	0.0250*** (0.0078)	-1.8078 (2.8324)
Specialised	-0.0105*** (0.0033)	1.1569 (1.2056)
Size	-1.21E-12 (1.14E-12)	4.95E-11 (4.14E-10)
Capitalisation	0.0191* (0.0116)	0.9854 (4.1986)
Liquidity	-0.0021 (0.0014)	0.0256 (0.4978)
Credit risk	0.0015 (0.0209)	-4.1016 (7.6219)
Leverage	-0.0364*** (0.0125)	1.7983 (4.5465)
Opera effici	-0.0454*** (0.0068)	0.6504 (2.4514)
Overhead	-0.0111 (0.0115)	0.8852 (4.1725)
Assuts	0.3158*** (0.0693)	5.1231 (25.1601)
PLS	0.0146* (0.0080)	5.0408* (2.9067)
Salam	-0.0143 (0.0334)	-0.9601 (12.1191)
Murabahah	0.0017 (0.0085)	-0.3363 (3.1017)
R2	0.6466	0.0087
No of Obs	162	162

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. *, **and *** indicate significance levels of 10, 5 and 1 percent respectively.

According to Table 7.3, the estimated value of adjusted R^2 for ROA is 64.66, showing that if 1% change occurred in all independent variables, ROA will consequently change by 64.66% approximately. The estimated value of R^2 for ROE is 0.0087, which means that if 1% change occurred in all independent variables, ROA will consequently change by only 0.87%.

A Higher value of adjusted R^2 resulting from the application of the pooled estimation method on the first equation, when profitability is measured by ROA, reveal that the variability in ROA of Sudanese Islamic Banks is highly explained by the linear correlation between this profitability measure and the set of profitability determinants employed in this study. On the other hand, the small value of adjusted R^2 resulting from the application of the pooled estimation method, when the profitability is measured by ROE, as well as the insignificant relationship between ROE and the independent variables, can be justified by the reason that the impact of these determinants on ROE of Sudanese state and private banks are different. This could be the reason of the insignificant impact when the regression is applied on the aggregated data of the two types of banks. This can also be seen from the variation in the mean value of the ROE of the two types of banks in Table 7.2.

Furthermore, Table 7.3 indicate that assets utilisation, as measured by total income to total assets, has highly positive and significant impact, at 1% level of significance, on ROA. If assets utilisation of Sudanese Islamic Banks improved by 1%, ROA of these banks will increase by 31.58%. This finding indicates that this determinant plays a highly influential role in improving the profits of Sudanese Islamic Banks. This means that any improvement in the internal monitoring and future planning concerning optimal use of assets will increase the profitability of Sudanese Islamic banks. This finding is in line with earlier findings of Bourke (1989) and those of Lai and Li (2014), who both prove positive impact of assets utilisation on banks' profitability.

In the Islamic Banking context, this result is consistent with the empirical result of Srairi (2010) and Ali *et al*., (2011), which establishes the existence of a positive and significant impact of assets utilisation on Islamic Banks' profitability.

On the other hand, assets utilisation is shown to have an insignificant impact on ROE. In the Islamic Banking context, this result is consistent with the empirical result of Akhtar *et al.,* (2011), which establishes the existence of an insignificant impact of assets utilisation on Islamic Banks' profitability.

In line with Bourke (1989), the researcher proves a negative and highly significant relationship between the profitability of Sudanese Islamic Banks, when measured by ROA, and the operational efficiency of these banks. If the ratio of Total Cost to Total

Income increased by 1%, ROA of Sudanese Banks will decrease by 04.54%. This finding could be justified, based on the finding of Ramadan (2011), who report that inverse relationship between profitability and operational efficiency of banks happens when these institutions are unable to transfer their expenses to their customers. This finding is also contradicted with the finding of Molyneux and Thornton (1992), who prove a positive association between this variable and the profitability of European Banking Sector.

In the context of the Islamic Banking industry, this finding is in line with the finding of Srairi (2010), who proves an inverse relationship between profitability and operational efficiency within Gulf Countries' Islamic Banks. At the same time, it is contradicted with the finding of Noor and Ahmad (2011), who prove a positive and significant relation between this determinant and the profitability of the world Islamic Banks from 1992 to 2009.

Contradiction in the findings on assets utilisation and operational efficiency could be related to the measure used for operational efficiency (total income). It may be possible that operating income would give a more consistent result. However, given that it is difficult to obtain this figure from the annual reports of Sudanese Islamic banks, who neither disclose their operating income nor provide enough consistent data that could enable one calculate the indicator, the researcher based her analysis on total income.

Findings on the impact of bank age on ROA shows high and significant adverse relationship between the two variables. This means that the newly established group of banks are more profitable than both old and middle aged banks, showing that newly established banks are able to invest in high-profit opportunities. This is in line with the earlier findings of Beck *et al*., (2005) and Beck and Kunt (2006) who both prove that newly established Nigerian banks are financially more profitable the old one, reflecting their ability to engage in new profit opportunities. On the other hand, the middle-aged group of banks are more profitable than old Sudanese Islamic Banks. This finding contradicts with those of Aburime (2008), who reports that during their first years, newly founded banks are not operationally profitable as they put their efforts into raising their market share rather than on increasing their profitability.

In contrast, the finding of the impact of bank age on ROE of Sudanese banking Industry shows a positive but insignificant correlation between the two variables. This finding is

in line with that of Dietrich and Wanzenried (2009), who establish that bank age does not significantly impact the profitability of banks in Switzerland.

The impact of leverage, as measured by the ratio of debt to equity ratio, is found to be negative and highly significant at less than 1%, when profitability is measured by ROA. According to Table 7.3, if leverage of Sudanese Islamic banks increases by 1%, their profitability will decrease by 3.64%. This could be interpreted according to Aburime (2008) and Qudah and Jaradat (2013), who suggest that negative association between leverage and profitability is related to the managements' capacity in forecasting, avoiding, monitoring and managing the risks associated with leverage. Accordingly, this may indicate that the management of Sudanese Islamic banks lack the capability to predict and avoid the risks associated with leverage. Referring to Guru (2002), Athanasoglou *et al.,* (2005) and Aburime (2008), this could have great negative impact on Sudanese Islamic Banks' security and capability to resist unexpected financial shock. This finding is contradicted by the earlier findings of Molyneux and Thornton (1992) and the later findings of Goddard *et al.,* (2004) and Al-Tamimi (2005), which prove the positive and statistically significant relationship between profitability and leverage.

In the Islamic Banking context, this is consistent with the findings of Izhar and Asutaya (2007), who establish a negative and significant relationship between leverage and profitability of Muamalat Islamic bank in Indonesia.

On the other hand, the impact of leverage on the profitability of Sudanese Islamic Banks, as measured by ROE, is found to be insignificant. This is in line with the findings of Qudah and Jaradat (2013), who prove the negative and insignificant relationship between profitability and leverage of Jordanian Islamic banks.

Findings on the impact of ownership reveal a positive and highly significant relationship between this factor and the profitability of Sudanese banks. It also shows that private banks are more profitable than state banks. This superiority in the performance of private banks can be explained by the excellence of private banks in operational efficiency ratio, leverage, liquidity, capitalisation, and assets utilisation, as shown from the comparison of their descriptive statistic in Table 7.2. Furthermore, it can be justified by the argument of Flamini *et al.,* (2009) and Athanasoglou *et al., (*2005), who report that as state banks are in charge of public and social commitments, they may have objectives other than profit

maximisation. This finding is in line with the earlier findings of Short (1979) and the later findings of Iannotta *et al.,* (2006) who prove that state-owned banks are less profitable than private banks.

Additionally, the result shows a high significant adverse relationship between specialisation and profitability of banks, implying that specialised banks are less profitable than non-specialised ones. This finding may possibly, according to Heffernan and Fu (2010), mean that specialised banks lose profit opportunities due to their limited areas of investment. This finding is contradicted by the findings of Heffernan and Fu (2010) with regards the Chinese banking system, which proves that specialised banks are more profitable than other Chinese banks.

Finding on the impact of overhead to total expenses is proved to be negatively and significantly related to profitability when measured by ROA. This finding could indicate that Sudanese Islamic Banks are to some extent unable to transfer their overheads to users of their financial services. This finding is supported by most literature which confirms the negative relationship between this determinant and profitability, assuming that efficient banks are supposed to reduce expenses for better profitability (see Bourke, 1989 and Hassan and Bashir, 2003). On the other hand, this is opposed to the findings of Haslem (1968), Molyneux and Thornton (1992), Naceur (2003) and Bourke (1989) who prove positive and significant correlations between these two determinants.

Findings on the impact of overhead expenses on ROE proves a positive and insignificant relationship exists between these indicators, implying that increasing staff expense of Sudanese Islamic banks will increase the profitability of Sudanese Islamic Banks. However, the increase is limited. In the Islamic Banking context, this finding is consistent with findings of Hassan and Bashir (2003) and Izhar and Asutaya (2007), who establish a positive insignificant relationship between the indicators.

Table 7.3 also indicates that capitalisation, as measured by total equity to total assets, has a positive and significant impact on ROA at 10% level of significance. Each 1% increase in capital will increase ROA by 1.9%. This relationship reflects the banks' ability to control financial risk exposure and to absorb losses. It also reflects that these banks are characterised by high financial collateral (security) which, according to Bashir (1999) and Sangmi and Nazir (2010), will allow them to enjoy investing in high risk but profitable

areas, diversifying their investment (business) through opening of new branches and reducing the consequences of unfavourable selection of investments. Additionally, it means that depositors, creditors, and investors of these banks will be protected in the case of loss or liquidation. This finding is consistent with those by Bourke (1989), Molynuex and Thorton (1992), Athanasoglou *et al*., (2005) and Flamini *et al.*, (2009), who all prove the positive and significant impact of capitalisation on banks' profitability. On the other hand, it is contradicted by the earlier literature of Short (1979), Berger (1995) and the later findings of Lee (2012), who suggest that lower capital ratio is linked to higher risk exposure, which will consequently lead to higher profit.

On the other end, the result shows the insignificant impact of capitalisation on ROE, indicating that capitalisation has no impact on ROE for these banks. This is consistent with the findings of Alper and Anbar (2011), who studied the banking sector in Turkey.

In the context of Islamic Banking, positive association between capitalisation and ROA is in line with the finding by Hassan and Bashir (2003), who establish a positive impact of capitalisation on the profitability of the worldwide Islamic Banks during 1994-2001. In contrast, the insignificant impact of capitalisation on ROE of Sudanese Islamic Banks is in line with Idris *et al*., (2011), who prove an insignificant association between capitalisation and the profitability of Malaysia Islamic banks. It is also in line with the argument of Haron (1996a), who suggests that the profitability of an Islamic Bank is not affected by the amount of issued capital.

The impact of bank size is found insignificant on both ROA and ROE, meaning that the size of a Sudanese Islamic Bank does not affect the amount of profit gained by these banks. The insignificant relationship between bank size and profitability could be related to the effect of the high inflation rate in the Sudanese economy. Such rate minimises the actual value of Sudanese pound and makes the profitability of these banks more related to the quality of investment than the quantity of their assets.

No significant relationship between bank size and profitability has been found in the previous studies (see Goddard *et al.,* 2004, Athanasoglou *et al.,* 2005, Atemnkenf and Joseph, 2006 and Lee, 2012, for instance). They all prove an insignificant association between profitability and bank size. On the other hand, it is contradicted by the earlier finding of Short (1979) and the later findings of Alkassim (2005) and Flamini *et al.,*

(2009), who establish a positive and significant relationship between bank size and profitability. It is also contradicted by the finding of Naceur (2003), who prove a negative relationship exists between bank size and profitability.

In the Islamic Banking context, this finding is consistent with the findings of Ali *et al.*, (2011) and Ramadan (2011). They prove insignificant association exists between bank size and profitability. It is also contradicted by the findings of Karim *et al*., (2010), Idris *et al*., (2011), Noor and Ahmad (2011) and Qudah and Jaradat (2013). They establish a positive and significant relationship between this determinant and profitability. A further contradiction is shown by the empirical results of Javaid *et al*., (2011) and Akhtar (2011). They prove a negative correlation between bank size and profitability exists.

Furthermore, credit risk is found to have no impact on the two measures of profitability. This finding could be interpreted, following the argument of Hassan and Bashir (2003), to imply that credit risk of Islamic banks contribute modestly to banks profits because their investments are heavily biased towards short-term trade finance. In addition, this finding could also be related to the nature of Islamic banks, which base their activity on risk sharing with their customers. Accordingly, any increase their investment, and consequently profitability, is unlikely to be connected to credit risk.

The result is also in line with the findings by AL Omar and AL-Mutairi (2008) and Flamini *et al.*, (2009), who prove the insignificant relationship between profitability and credit risk exist. It also contradicts the findings by Athanasoglou *et al*., (2005), who suggest a negative and significant impact of credit risk on profitability. Srairi (2010) assert that credit risk is significantly and positively related to the profitability of Conventional and Islamic banks in GCC countries.

The final internal determinant of banks' profitability in relation to both Conventional and Islamic banking is liquidity. The result shows the insignificant impact on profitability, whether it is measured by ROA or ROE. This finding could be related to the nature of some of the Islamic banks modes of finance, which requires no cash to proceed the transaction (Morabahah and Modarabah).

In the context of Conventional banks, this finding is supported by Guru *et al., (*2002) and later by Alper and Anbar (2011), who show no significant impact of liquidity on banks'

profitability. In contrast, it is inconsistent with the earlier finding of Bourke (1989) and the latest findings of Al-Tamimi (2005) that prove a positive and significant association between liquidity and profitability. In the Islamic Banking context, this finding is in harmony with the finding of Idris *et al*., (2011), who assert insignificant association exist between liquidity and profitability of Islamic Banks located in Malaysia. In contrast, Haron (1996a), Haron and Azmi (2004), Ramadan (2011) and Noor and Ahmad (2011), conclude a positive and significant relationship between liquidity and the profitability of Islamic banks.

Turning to the profitability determinants in relation to Islamic Banking Industry, the regression results show that PLS modes of finance have a positive and significant association with both ROA and ROE. Positive correlation between profitability and PLS modes of finance is doubted by Haron (1996a), who claims an inverse relationship between profitability and PLS modes of finance, given that profit usually takes place after a one year of starting the project or upon its completion. However, this contradiction can be justified by the policy of Central Bank of Sudan, which encourages banks to use the Musharaka mode in financing all economic activities, as well as giving each bank the right to determine the Mudarib's percentage share in the profit (Central Bank of Sudan Policies 2010). Such policies make Sudanese Islamic Banks able to benefit from the nature of PLS modes of finance, which gives banks the right to group the money provided by customers in one pool with equity at the pre-agreed proportion of profit or loss sharing.

In contrast, the result also proves the insignificant relationship between non-PLS, as measured by Morabahah, and the two measures of profitability exist. This may possibly be justified by the argument advanced by Haron (2004). Haron reports that this mode of financing is short-term in nature and therefore less able to produce profit compared to long term investment. Consequently, any increasing amount of Morabah investment will not increase Islamic banks profitability. This finding is supported by Haron (1996a) and Haron (2004), who establish no significant relationship between Morabahah and the profitability measures.

Findings on the impact of PLS and non-PLS modes of finance suggest that Sudanese Islamic Banks are more committed to PLS modes of finance than non-PLS. This

superiority of PLS over non-PLS is likely, according to Samad and Hassan (2000), in an economy where informational asymmetries, resulting from moral hazard, are smaller.

Finally, the impact of Salam mode of finance is proved to be insignificant on both the ROA and ROE of Sudanese Islamic Banks. Such findings may possibly relate to the nature of Salam Contract, which is characterised by counter-party default risk. This justification is supported by the fact that the Sudanese economy is characterised by a high inflation rate, which may cause differences between Salam contract price and market price. Such price difference may encourage default risk among simple farmers. In addition to that, the it could be interpreted by the nature of Salam contract which is in some cases make it difficult for the bank to specify an accurate suitable future price as, at the time the goods are received by the bank the price may become lower than the expected price, leading to commodity price risk.

7.4. Robustness Check

The researcher also applies 10 robustness checks, to test the validity of the regression findings. To this effect, she uses different measures and omits some of the insignificant determinants.

Table 7.4 and 7.5 show findings of robustness checks, which provide strong evidence to confirm almost all the findings of the regression result on the entire sample of Sudanese Islamic banks.

Table 7.4: Robustness on the Impact of Independent Variables on ROA of the Entire Sample of Sudanese Islamic Banks

Variables	Measures Substitute	Original Equ	Equ1	Equ2	Equ3	Equ4	Equ5	Equ6	Equ7	Equ8	Equ9	Equ10
Constant		0.1416*** (0.0282)	0.1430*** (0.0027)	0.1434*** (0.0270)	0.1321*** (0.0262)	0.1237*** (0.0210)	0.1134*** (0.0229)	0.1094*** (0.0227)	0.1358 (0.0311)	0.098361 (0.0287)	0.1062 (0.0260)	0.1419 (0.0249)
Age		-0.0088*** (0.0026)	-0.0087*** (0.0027)	-0.0088*** (0.0026)	-0.0082*** (0.0026)	-0.0075*** (0.0023)	-0.0091*** (0.0025)	-0.0093*** (0.0025)	-0.0079*** (0.0029)	-0.0069*** (0.0028)	-0.006*** (0.0026)	-0.0096*** (0.0026)
Type		0.0250*** (0.0077)	0.0248*** (0.0077)	0.0245*** (0.0076)	0.02467*** (0.0074)	0.0265*** (0.0074)	0.0207*** (0.0077)	0.0216*** (0.0077)	0.0227*** (0.0081)	0.0253*** (0.0079)	0.0285*** (0.0079)	0.0232*** (0.0075)
Specialised		-0.0105*** (0.0033)	-0.0104*** (0.0033)	-0.0104*** (0.0032)	-0.0110*** (0.0031)	-0.0101*** (0.0032)	-0.0086*** (0.0033)	-0.0093*** (0.0033)	-0.009*** (0.0035)	-0.0099*** (0.0033)	-0.0121*** (0.0033)	-0.0100*** (0.0032)
TOTASS		-1.21E-12 (1.14E-2)	-1.28E-2 (1.09E-2)	-1.25E-12 (1.09E-12)	-1.11E-12 (1.06E-2)	**X**	**X**	**X**	-1.35E-12 (1.20E-12)	6.84E-13 (1.16E-12)	-8.87E-14 (1.10E-12)	-1.85E-12 (1.14E-12)
Capad1		0.0191* (0.0115)	0.0187* (0.0113)	0.01808* (0.0112)	0.0285*** (0.0117)	0.0214** (0.0108)	0.0198* (0.0106)	0.0168* (0.0105)	0.0153* (0.0124)	0.0265*** (0.0112)	0.0280*** (0.0114)	0.0174 (0.0113)
LIQ2	Current Ass: current liab	-0.0021 (0.0013)	-0.0022 (0.0014)	-0.0021 (0.0013)		0.0020 (0.0013)	-0.0020 (0.0014)	**X**	-0.003 (0.0026)	-0.0015 (0.0014)	0.0001 (0.0011)	-0.0019 (0.0013)
	Total dep: tot Assets				-0.0041*** (0.0013)			**X**				
CREDR1	LLP: :total loan	0.0015 (0.0209)	0.0018 (0.0208)	0.0018 (0.0207)	-0.0076 (0.0206)	0.0033 (0.0207)	**X**	**X**			0.0123 (0.0215)	0.0065 (0.0206)
	LLP: :total Assets							**X**	-0.0869 (0.0828)			
	loan :total Assets									-0.0271*** (0.0090)		

Lever2	Long term liab: total equity	-0.0364*** (0.0125)	-0.0365*** (0.0125)	-0.0368*** (0.0124)	-0.0295*** (0.0100)	-0.0317*** (0.0116)	-0.0476*** (0.0122)	-0.0375*** (0.0098)	-0.0407*** (0.0160)	-0.0452*** (0.0131)		-0.0339*** (0.0123)
	Total deb: total Assets										-0.0008 (0.0014)	
Mgt1		-0.0454*** (0.0067)	-0.0455*** (0.0067)	-0.0455*** (0.0066)	-0.0431*** (0.0065)	-0.0433*** (0.0064)	-0.0336*** (0.00629)	-0.0356*** (0.0061)	-0.0401*** (0.0078)	-0.032*** (0.0063)	-0.0510*** (0.0066)	-0.0366*** (0.0069)
Overh2	Overheads: total exp	-0.0112 (0.0114)	-0.01142 (0.0113)	-0.0112 (0.0112)	-0.0107 (0.0110)	-0.0084 (0.0110)	-0.0087 (0.0115)	-0.0097 (0.0115)	-0.0088 (0.0120)	-0.0002 (0.01181)	-0.0109 (0.0118)	
	Overheads: total Assets											-0.4370*** (0.1663)
Assut1		0.3158*** (0.0692)	0.3131*** (0.0678)	0.3130*** (0.0675)	0.3263*** (0.0662)	0.3485*** (0.0602)	0.5897*** (0.0501)	0.5900*** (0.0502)	0.3293*** (0.0733)	0.6218*** (0.0534)	0.2938*** (0.0707)	0.3703*** (0.0670)
PLS		0.0145* (0.0080)	0.0133*** (0.00518)	0.0138*** (0.0050)	0.0133*** (0.0049)	0.0135*** (0.0050)	0.0132*** (0.0046)	0.0139*** (0.0046)	0.0154 (0.0100)	0.0148* (0.0082)	0.0156** (0.0082)	0.0145* (0.0078)
Salam		-0.0143 (0.0333)	-0.0151 (0.0330)	**X**	**X**	**X**	**X**	**X**	-0.0168 (0.0353)	-0.0186 (0.0358)	-0.0177 (0.0343)	-0.0126 (0.0326)
MURBH		0.0016 (0.0085)	**X**	**X**	**X**	**X**	**X**	**X**	-0.0018 (0.0101)	0.0039 (0.009)	0.0027 (0.0087)	0.0005 (0.0083)
R^2		0.6466	0.6489	0.6508	0.6651	0.6500	0.7502	0.7489	0.6533	0.0039	0.6270	0.6603

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. *, **and *** indicate significance levels of 10, 5 and 1 percent respectively

Table 7.4 shows that one of the differences between the original findings and the results of the robustness checks is the impact of credit risk, which remains insignificant when it is measured by loan loss provision to total loan and loan loss provision to total assets. However, the impact of this determinant turns to negative and highly significant when credit risk is measured by total investment (loan) to total assets. According to Athanasoglou *et al.*, (2006) and Ramadan (2011), this indicates lower quality of credit assessment and monitoring and collection policy within Sudanese Islamic Bank. However, this contradiction may possibly be justified by the ambiguity of total investment to total assets as a credit risk measure.

The impact of leverage on ROA also changed from negative and highly significant, when leverage is measured by total liability to total assets, to insignificant when leverage is measured by long-term liability to total equity. The difference between the two findings is more likely to be related to the leverage measure, which reduces the value of total liability to only long term liability.

Finally, the impact of staff expenses also changed from having no impact on ROA, when it is measured by overhead to total expenses, to having an adverse and highly significant impact, when it is measured by overhead to total assets. This could possibly be due to the nature of the relationship between assets and profitability, on one hand, and expenses and profitability, on the other hand.

In contrast, findings of the robustness check on ROE provides strong evidence to confirm the regression findings on the original equation, as can be seen from Table 7.5. The only difference in the robustness checks appears when credit risk is measured by loan loss provision to total assets, which changes the insignificant impact of bank age, capitalisation, leverage, operational efficiency to negative and significant impact. This contradiction in the finding could again be justified by the ambiguity of total investment (loan) to total assets as credit risk measure.

Table 7.5: Robustness on the Impact of Independent Variables on ROE of the Entire Sample of Sudanese Islamic Banks

Variables	Variables measures	Original Equ	Equ1	Equ2	Equ3	Equ4	Equ5	Equ6	Equ7	Equ8	Equ9	Equ10
Constant		-8.1045 (10.2463)	-8.3951 (9.8565)	-8.3768 (9.8197)	-8.3783 (9.7414)	-7.3858 (7.6111)	-8.7330 (7.4111)	-8.5503 (7.3269)	1.5626 (0.3130)	-9.7139 (0.3146)	-6.4434 (9.2274)	-9.2634 (0.0249)
Age		0.2158 (0.974203)	0.2089 (0.9688)	0.4393 (0.962628)	0.21843 (0.9662)	0.13584 (0.8617)	0.3864 (0.820357)	0.3943 (0.8168)	-0.1010*** (0.0292)	0.5579 (0.5554)	0.1099 (0.9340)	0.4393 (0.0025)
Type		-1.8078 (2.8324)	-1.7636 (2.7934)	-1.7756 (2.7783)	-1.8172 (2.7672)	-1.8742 (2.7006)	-0.6986 (2.5135)	-0.7408 (2.4962)	0.1190 (0.0817)	-0.5869 (0.8259)	-1.9440 (2.7986)	-1.36961 (0.0075)
Specia		1.1569 (1.2055)	1.1391 (1.1903)	1.1407 (1.1861)	1.1577 (1.1724)	1.1688 (1.169294)	0.6888 (1.0914)	0.7198 (1.0760)	-0.0286 (0.0352)	0.6722 (0.5542)	1.2334 (1.1892)	1.0401 (0.0032)
TOTASS		4.95E-11 (4.14E-10)	6.22E-11 (3.96E-10)	6.33E-11 (3.95E-10)	6.27E-11 (3.94E-10)	X	X	X	-5.81E-12 (1.20E-11)	7.82E-11 (0.8404)	-1.52E-12 (3.89E-10)	1.79E-10 (1.14E-12)
Capad1		0.9852 (4.1985)	1.0653 (4.1195)	1.0332 (4.0777)	1.3286 (4.3410)	0.8635 (3.9254)	-0.1493 (3.4553)	-0.0160 (3.3739)	-0.3053*** (0.1247)	0.0357 (0.9924)	0.6739 (4.0551)	1.2015 (0.0113)
LIQ2	Current Ass: current liab	0.0256 (0.4978)	0.0326 (0.4920)	0.0358 (0.4879)		0.0315 (0.4856)	0.0910 (0.4759)	X	-0.0387 (0.0270)	0.0860 (0.8610)	-0.0849 (0.4118)	-0.0100 (0.0013)
	Total dep: tot Assets				-0.0796 (0.5025)							
CREDR1	LLP: :total loan	-4.1016 (7.6218)	-4.1694 (7.5707)	-4.1731 (7.5452)	-4.4805 (7.6693)	-4.2497 (7.5056)	X	X			-4.8955 (7.6131)	-4.9568 (0.0206)
	LLP: :total Assets								-0.3353 (0.8328)			
	loan :total Assets									-0.6221 (0.8374)		

Lever2	Long term liab: total equity	1.7983 (4.5464)	1.8148 (4.5287)	1.7983 (4.5068)	1.5360 (3.7255)	1.5411 (4.1986)	2.4059 (3.9735)	1.9479 (3.1611)	-0.3545 ** (0.1612)	2.8007 (0.5249)		1.3888 (0.0123)
	Total deb: total Assets										0.1638 (0.5139)	
Mgt1		0.6504 (2.4513)	0.6708 (2.4359)	0.6712 (2.42783)	0.7988 (2.4403)	0.5581 (2.3157)	0.4330 (2.0370)	0.5243 (1.9741)	-0.5102*** (0.0786)	0.5836 (0.7841)	0.8873 (2.3459)	-0.6468 (0.0069)
Overh2	Overhea-ds: total exp	0.8852 (4.1724)	0.9534 (4.1109)	0.9663 (4.0926)	0.9981 (4.0921)	0.8243 (3.9829)	2.5106 (3.7434)	2.5567 (3.7243)	-0.0723 (0.1214)	2.6833 (0.4984)	0.8375 (4.1761)	
	Overhe-ads: total Assets											72.4618 (0.1663)
Assut1		5.1231 (25.160)	5.6417 (24.618)	5.6346 (24.535)	5.8289 (24.571)	3.8449 (21.784)	-0.9168 (16.2233)	-0.9277 (16.173)	0.3951 (0.7372)	0.8674 (0.9614)	5.9269 (25.016)	-2.3986 (0.0670)
PLS		5.0408* (2.9067)	5.2804*** (1.8811)	5.3070*** (1.8324)	5.2693*** (1.8300)	5.3207*** (1.8249)	4.5817*** (1.5105)	4.5530*** (1.4984)	0.2194** (0.1011)	3.9130 (0.1570)	4.9842* (2.9041)	5.0391 (0.0078)
Salam		-0.9601 (12.119)	-0.8005 (11.9891)	X	X	X	X	X	-0.2900 (0.3551)	-0.8114 (0.9461)	-1.0075 (12.139)	-1.0705 (0.0326)
MURBH		-0.3363 (3.101733)	X	X	X	X	X	X	0.1233 (0.101884)	-0.8746 (0.7772)	-0.4264 (3.1043)	-0.0474 (0.0083)
R^2		0.0087	0.0153	0.0219	0.0221	0.0283	0.020204	0.0262	0.5319	-0.0041		0.0177

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. *, **and *** indicate significance levels of 10, 5 and 1 percent respectively

7.5. Estimated Regression Results for the State and Private Sudanese Islamic Banks

The Likelihood test estimated for the Pooled regression indicates that Pooled least square for the ROA model, for the two types of banks and ROE for private banks, should be accepted, since FEM has been rejected because of the insignificance of the Likelihood test (0.5075 for ROA of state banks, 0.6909 for ROA of private banks and 0.7850 for ROE of private banks). On the other hand, the FEM has been accepted for ROE of state banks, as both Panel Least Square and RAM are rejected. The key findings of the regression analysis for the two types of banks are compared in Tables 7.6 and 7. 7.

Table 7.6 reports comparisons of the key empirical results of the profitability of Sudanese State and Private Banks when measured by ROA. According to the Table, the regression result shows that R^2 of the profitability of state and private banks, when measured by ROA, are 0.9399 and 0.6440 respectively, showing that 93% and 64% of the ROA of these banks are determined by the explanatory variables. It also means that if 1% change occurred in all independent variables, ROA of state and private banks will consequently be changed by 93% and 64% respectively.

On the other hand, Table 7.7 shows comparisons of the empirical findings of the profitability of Sudanese State and Private Banks when measured by ROE. According to the Table, the regression result shows that R^2 of the ROE of state and private banks are 0.9428 and 0.5632 respectively, showing that 94% and 56% of the variation in ROE of these banks are explained by the explanatory variables. It also means that if 1% change occurred in all independent variables, ROE of state and private banks would consequently be changed by 94% and 56% respectively.

Table 7.6: Coefficient Estimates on ROA of State and Private Sudanese Islamic Banks

Independent variables	State Banks	Private Banks
Constant	0.0683* (0.0399)	0.1955*** (0.0347)
Age	-0.0018 (0.0029)	-0.0022 (0.0039)
Specialised	-0.0020 (0.0020)	-0.0270*** (0.0057)
Size	-1.03E-12 (9.13E-13)	5.99E-13 (1.90E-12)
Capitalisation	-0.0314*** (0.012635)	0.0153 (0.0139)
Liquidity	0.0026 (0.0035)	-0.0020 (0.0015)
Credit risk	-0.0565*** (0.0141)	-0.0061 (0.0284)
Leverage	-0.0130 (0.0153)	-0.0361** (0.0163)
Opera effici	-0.0461*** (0.0045)	-0.0398*** (0.0101)
Overhead	-0.0259* (0.0148)	-0.0188 (0.0129)
Assut	0.4701*** (0.0884)	0.2863*** (0.0813)
PLS	0.0108 (0.0069)	0.0236** (0.0102)
Salam	-0.2860*** (0.0791)	-0.0087 (0.0355)
Murabahah	0.0002 (0.0080)	0.0074 (0.0107)
R2	0.9399	0.6440
obs	44	118

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 7.7: Coefficient Estimates on ROE of State and Private Sudanese Islamic Banks

Independent variables	State Banks	Private Banks
Constant	6.4735*** (1.1612)	0.9467*** (0.1575)
Age	-0.2282*** (0.0760)	-0.0605*** (0.0178)
Specialised	-0.1692*** (0.0356)	-0.0236 (0.0259)
Size	-1.21E-10*** (2.31E-11)	-2.07E-12 (8.65E-12)
Capitalisation	-0.1246 (0.2406)	-0.2266*** (0.0634)
Liquidity	-0.2769* (0.1474)	0.0056 (0.0069)
Credit risk	2.6253*** (0.3264)	-0.2887** (0.1293)
Leverage	-1.3676*** (0.5159)	-0.0803 (0.0740)
Opera effici	-2.2554*** (0.1176)	-0.3101*** (0.0460)
Overhead	-1.3735*** (0.3952)	-0.1158** (0.0588)
Assut	-10.573*** (1.8581)	0.1644 (0.3695)
PLS	0.1911 (0.1367)	0.1234*** (0.0466)
Salam	1.4102 (2.0541)	-0.0289 (0.1614)
Murabahah	0.1469 (0.1867)	0.1002** (0.0486)
R2	0.9428	0.5632
obs	44	118

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and* indicate significance levels of 1,5,10 percent respectively

7.5. Estimated Regression Results for the State and Private Sudanese Islamic Banks

The Likelihood test estimated for the Pooled regression indicates that Pooled least square for the ROA model, for the two types of banks and ROE for private banks, should be accepted, since FEM has been rejected because of the insignificance of the Likelihood test (0.5075 for ROA of state banks, 0.6909 for ROA of private banks and 0.7850 for

ROE of private banks). On the other hand, the FEM has been accepted for ROE of state banks, as both Panel Least Square and RAM are rejected.

The key findings of the regression analysis for the two types of banks are compared in Tables 7.6 and 7. 7.

Table 7.6 reports comparisons of the key empirical results of the profitability of Sudanese State and Private Banks when measured by ROA. According to the Table, the regression result shows that R^2 of the profitability of state and private banks, when measured by ROA, are 0.9399 and 0.6440 respectively, showing that 93% and 64% of the ROA of these banks are determined by the explanatory variables. It also means that if 1% change occurred in all independent variables, ROA of state and private banks will consequently be changed by 93% and 64% respectively.

On the other hand, Table 7.7 shows comparisons of the empirical findings of the profitability of Sudanese state and private banks when measured by ROE. According to the Table, the regression result shows that R^2 of the ROE of state and private banks are 0.9428 and 0.5632 respectively, showing that 94% and 56% of the variation in ROE of these banks are explained by the explanatory variables. It also means that if 1% change occurred in all independent variables, ROE of state and private banks would consequently be changed by 94% and 56% respectively.

The following is an explanation of the impact of bank-specific and industry specific indicators on ROA and ROE of state and private banks. The impact of factors that are of relation to only Islamic banking industry is also provided.

7.5.1 The Impact of Bank Specific determinants on ROA and ROE of State and Private Banks

7.5.1.1 Capitalisation

Table 7.6 indicates that capitalisation has a negative and highly significant impact on ROA of state banks and ROE of private banks. According to Berger (1995), Dietrich and Wanzenried (2009) and Lee (2012), this negative correlation may reflect the advantages of higher leverage. On the other hand, according to Bashir (1999), it may still reflect that

both state and private banks may face some consequence of unfavourable selection, which may result from this negative correlation between profitability and capitalisation. Although most literature contradicts this finding (see AL-Omar and AL-Mutairi, 2008 and Athanasoglou *et al*., 2005), it is in line with Alkassim (2005) who proves a negative and highly significant relationship between capitalisation and profitability of the banking sector in GCC Countries. In the Islamic Banking context, this finding is contradicted by Ramadan (2011), who reveals positive impact between capitalisation and the profitability of Jordanian Islamic Banks.

On the other hand, capitalisation is found to have an insignificant impact on ROE of state banks and the ROA of private banks. Hassan and Bashir (2003) also find that capitalisation has an insignificant impact on the profitability of worldwide Islamic Banks during 1994-2001.

7.5.1.2 Credit Risk

With regards the impact of credit risk on the profitability of state and private Sudanese Islamic banks, the regression results suggest negative and highly significant relationship at 1% level of significance for ROA of state banks and negative at 5% level of significance for ROE of private banks. According to Hassan and Bashir (2003), this may indicate poor quality of credit assessment and monitoring and collection policy, which could make these banks more vulnerable to risk, thus impacting their ability to have sufficient provisions for potential losses and avoiding asset concentration on cretin geographical or economic sector. This finding is supported by Athanasoglou *et al*., (2005), who prove the negative and significant impact of credit risk on banks' profitability.

Additionally, the findings on the impact of credit risk on profitability, when measured by ROE, proves positive and highly significant relationship exist between this determinant and ROE of state banks, which, according to Hassan and Bashir (2003), could possibly indicate that state banks are characterised by good quality of credit assessment and monitoring and collection policy. Any contradiction in the findings on the impact of credit risk on state banks could possibly be related to the nature of ROE, which excludes banks' leverage.

In the Islamic Banking context, this finding is in line with Ramadan (2011), who finds a positive and significant relationship between this determinant and Islamic banks' profitability.

The insignificant impact is found between credit risk and ROA of private banks, which is in harmony with the finding of AL-Omar and AL-Mutairi (2008), who prove the insignificant relationship between credit risk and profitability of banks. In the Islamic Banking context this is in line with Ali *et al.*, (2011).

7.5.1.3 Operational Efficiency

The coefficient of operational efficiency entered the regression model with a negative sign and is showing as having statistically significant impact on both ROA and ROE of state and private banks alike. This is according to Ramadan (2011), who shows evidence that both types of Sudanese banks are unable to transfer their operational expenses to their customers. Bourke (1989)'s early argument supports this finding with claims that a reduced expense is likely to enhance the profitability of a financial institution. However, Molyneux and Thornton (1992) contradict this with the finding of a positive and significant impact of operational efficiency on the profitability of European Banking sector. In the Islamic Banking context, it is in line with the findings of Srairi (2010), who shows an inverse relationship between profitability and operational efficiency exists within Gulf Countries' Islamic banks.

7.5.1.4 Assets Utilisation

The impact of assets utilisation is shown to be positive and highly significant on ROA of state and private banks alike. This shows the efficiency of the management of these banks in utilising their resources and indicates their potential ability to improve and expand investment. Most literature agrees to this positive correlation between assets utilisation and profitability (see Bourke, 1989 and Atemnkenf and Joseph, 2006).

In the Islamic Banking context, this finding has the support of Ali *et al.*, (2011) and Ramadan (2011), who note positive and significant relation between assets utilisation and the profitability of Islamic Banks.

In contrast, findings on the impact of assets utilisation, when profitability is measured by ROE, shows a negative and highly significant relationship with the ROE of state banks. Furthermore, the insignificant impact from this indicator on the ROE of private banks was also found, implying that high profits earned by the banks do not represent the good level of assets utilisation. Contradiction in the findings in relation to ROA and ROE could be justified by the nature of assets utilisation measure (total income to total assets) used. In other words, the likely positive relationship might be expected when total assets are used in both measures.

7.5.1.5 Overhead Expenses

Empirical findings of the estimation of the relationship between overhead expenses and profitability prove the negative and significant relationship with ROA and ROE of state banks and ROE of private banks. This finding is in harmony with most literature, which claims a negative relationship between overhead expenses ratio and profitability exists (see Bourke, 1989 and Hassan and Bashir, 2003). In contrast, it is not supported by earlier findings of Molyneux and Thornton (1992) and the later findings of Guru *et al*., (2002) and Naceur (2003): both support the idea that better employees' productivity is linked with high wage rate.

In the Islamic Banking context, this finding is contradicted by Hassan and Bashir (2003), who suggest a positive and significant association between overhead expenses and the profitability of the Islamic banks' worldwide, during 1994-2001.

Findings on the relationship between ROA and overhead expenses of private banks proves negative but insignificant relationship exists, which is in line with Kunt and Huizinga (1999) and Flamini *et al.,* (2009).

7.5.1.6 Leverage

The result also shows a negative and highly significant correlation between leverage and ROE of state banks and a negative relationship, at 5% level of significance with ROA of private banks. This, according to Aburime (2008), indicates that the two types of banks lack the skills of forecasting, monitoring, avoiding and managing leverage risks.

Nevertheless, this finding is not supported by Al-Tamimi (2005), who suggest positive and statistically significant relationship exist between profitability and leverage of UAE Commercial Banks. In the Islamic Banking context, this finding is agreed by Izhar and Asutaya (2007) and Qudah and Jaradat (2013), who note a negative and significant relationship between leverage and the profitability of Islamic Banks.

In addition, the result proves insignificant correlation exists between leverage and ROA of state banks and ROE of private banks. The insignificant relationship between leverage and profitability is in harmony with the findings of Short (1979) that proves the insignificant impact of leverage on the profitability of banks. In the Islamic Banking context, it is in line with the finding of Javaid *et al*., (2011), who prove the insignificant impact of leverage on the Pakistani Islamic banks.

7.5.1.7 Liquidity

Liquidity is also proven to be significant, with a negative sign on only ROE of state banks. This finding can be justified by the argument advanced by Al Omar and Mutairi (2008), who report that negative relationship between liquidity and profitability is likely, as keeping higher liquid assets reduces the banks' capability to generate profit. This finding is also supported by Molyneux and Thorton (1992), who proves the negative relationship between liquidity and profitability exists. However, the finding is contradicted by Bourke (1989) and Al-Tamimi (2005), who show evidence of a positive impact of liquidity on banks' profitability.

In the Islamic Banking context, this finding contradicts Haron (1996), who suggests the positive and significant impact of liquidity on the profitability of Islamic Banks.

Liquidity is also found to be insignificant with ROA of both state and private banks and ROE of private banks, which, in the Islamic Banking context, is in agreement with the findings of Qudah and Jaradat (2013), who also establish an insignificant relationship between liquidity and profitability of Islamic Banks.

7.5.2 The Impact of Industry Specific determinants on ROA and ROE of State and Private Banks

7.5.2.1 Bank Age

The result on bank age suggests a negative and highly significant association between bank age and ROE of the two types of banks. This finding implies that the newly established Sudanese Islamic Banks are more profitable than the middle-aged and old Sudanese banks. It also implies that middle aged Sudanese banks are more profitable than old Sudanese banks. This finding indicates that newly founded banks are effectively able to create new profit opportunities. On the contrary, Aburime (2008) argues that newly founded banks are not operationally profitable in the first few years after their establishment, as they need to place greater focus on raising their market share than on increasing their profitability. Beck and Kunt (2006) support this argument by suggesting that, owing to their experience, older established banks are able to enjoy the performance and good reputation advantages over the newly established.

On the other hand, the insignificant relationship is proved to exist between bank age and ROA for both state and private banks. This finding is in accordance with the results of Dietrich and Wanzenried (2009), who note the insignificant impact of bank age on Switzerland commercial banks. The differences in the impact of bank age on ROA and ROE could be justified by the nature of ROE.

7.5.2.2 Bank Size

The impact of bank size on the profitability of state and private Sudanese Islamic Banks is found to be significant only on state banks when profitability is measured by ROE. This finding is in accordance with the finding of Athanasoglou *et al.,* (2008) and Naceur (2003), who suggest that negative relationship between bank size and profitability is expected, as expanding the bank size usually leads to limited cost reduction and limited economies of scale advantage. Furthermore, this finding is supported by the argument by Beck and Kunt (2006), which suggest that it is more difficult for financial organisations to develop to their optimal size when there is a lack of well-developed financial markets and legal systems.

In the Islamic Banking context, this finding is in line with the earlier finding of Haron (1996a), who establish an inverse relationship between bank size and profitability measures.

On the other hand, the result proves a negative insignificant association between bank size and ROA of state and private banks and ROE of private banks, which is in line with the finding of Atemnkenf and Joseph (2006) and Lee (2012).

7.5.2.3 Specialisation

Specialisation is shown to have a negative and highly significant impact on ROA of private banks and ROE of state banks. Otherwise, it is found to have a negative but insignificant impact on ROA of state banks and ROE of private banks. The negative relationship between specialisation and profitability could possibly mean that specialised banks are losing profit opportunity because of their limited areas of investment. This finding is contradicted by Heffernan and Fu (2010). They show a positive and significant impact of specialisation on ROE and insignificant impact on ROA.

7.5.3 The Impact of Islamic Banking determinants on ROA and ROE of State and Private Banks

7.5.3.1 Salam

Salam has a negative and highly significant correlation with the ROA of state banks. Furthermore, it is found to have an insignificant impact on ROA of private banks and ROE of state and private banks. This may imply that state banks are committed to playing their roles of supporting the country's economy by assisting the agricultural sector.

At the same time, it should be pointed out that there are problems with the application/practice of this mode of finance, which may impact profitability. First is the counterparty risk. This is a common risk in this type of finance as the client may possibly default after taking the payment in advance. Secondly, it is possible that at the time the goods are received by the bank, the price may become lower than the expected price, thus creating commodity price risk. This result is supported by the earlier finding on the impact of Salam on the profitability of the entire sample.

7.5.3.2 PLS verse Non-PLS

PLS, as measured by the ratio of Mudarabah and Musharaka to total modes of finance, is found to be positive and highly significant, at 1% level of significance, with ROE of private banks and positive (with at 5% level of significance) with ROA of private banks. In addition, non-PLS, as measured by the ratio of Murabaha to total modes of finance, is shown to be positive, with 5% level of significance, for ROE of private banks and insignificantly positive for ROA of private banks. This result indicates that private banks are more committed to the PLS modes of finance than to non-PLS modes of finance. On the other hand, findings of state banks show an insignificant correlation of PLS modes finance with ROA and ROE. In contrast, non-PLS proves to have a positive and insignificant correlation with both ROA and ROE of state banks, indicating that state banks are less committed to PLS and non-PLS modes of finance than private banks.

Findings on the positive impact of both PLS and non-PLS on the profitability of private banks and findings of the insignificant impact of PLS and non-PLS on the profitability of state banks could be justified by the strategies used by state and private banks. According to the 2010 Annual Report of the Central Bank of Sudan, although Central Bank's policy does not differentiate between the two types of banks (as it specifies the same minimum and maximum rate for the potential profit of both PLS and non-PLS modes of finance), for competition purposes, the state banks prefer to use the minimum profit rate, because they are satisfied with the profits generated from their privilege on large government projects. On the other hand, the private banks choose the maximum rate of potential profits in their quest for profit maximisation.

7.6. Summary

This chapter identifies the profitability determinants of Islamic Banks operating in Sudan, the country with full adherence to Islamic Financial System, over the period 2005-2013. The chapter also provides evidence on the impact of these determinants on state-owned banks and private banks operating in the country. The sample covers 27 Banks (10 state banks and 17 private banks). This sample covers around 75% of the total number of banks operating in Sudan.

The empirical results suggest that the main performance determinants on ROA of the entire sample are bank type, capitalisation and assets utilisation, which have a positive and significant impact. Additionally, ROA is significantly adversely affected by operation efficiency, bank age, leverage and specialisation. With regards the profitability determinants, in relation to the Islamic Banking industry, only PLS is found to have a significant impact, with positive signs on both ROA and ROE. Furthermore, all other determinants are established to have no impact on ROE of the entire sample of Sudanese Islamic Banks.

In relation to the impact of the examined profitability determinants on state banks and private banks, the empirical results show that assets utilisation is the only factor that has significant positive impact on ROA of state banks. Capitalisation, credit risk, operation efficiency, overhead and Salam modes of finance all prove to have a negative and significant impact on ROA of state banks. No significant impact was found for bank age, specialisation, size, liquidity, leverage, PLS and Morabahah on ROA of state banks.

In contrast, ROE of state banks is seen to be determined by the positive and significant effect of credit risk and the negative and significant effect of bank age, specialisation, bank size, liquidity, leverage, operational efficiency, assets utilisation and overhead. Meanwhile, capitalisation, PLS, Salam and Morabahah have been found to have no impact on ROE of state banks.

Conversely, assets utilisation and PLS are the only factors that have a positive and significant impact on ROA of private banks. Specialisation, leverage, operational efficiency and PLS have an adverse significant relationship with ROA of private banks. No significant impact was found for bank age, size, capitalisation, liquidity, credit risk, overhead, Salam and Morabahah on ROA of private banks.

Interestingly, the impact of PLS and Morabahah is shown to be positive and significant on ROE of private banks, whereas bank age, capitalisation, operational efficiency, overhead and credit risk all have a negative and significant impact on ROE of private banks. Furthermore, specialisation, size, liquidity, leverage, assets utilisation and Salam are all found insignificant.

Chapter Eight

Corporate Governance and Bank Profitability

8.1. Introduction

The literature on corporate governance emphasises the vital importance of the structure of corporate governance. They highlight the essential role it plays in providing information for monitoring, advising, promoting and advancing decision-making effectiveness. In this respect, Gillan (2006) and Bøhren and Strøm (2007) argue that constructing an effective, informed and decisive structure of corporate governance can have a great impact on firms' performance. However, a mission of constructing such corporate governance, these authors argue, involves a number of difficulties. They note that this mission encompasses a wide-ranging set of board mechanisms, but that we lack both theories and evidence on the impact of these mechanisms on firms' performance. Bøhren and Strøm (2007) use this point to argue that when regulators introduce a range of top management mechanisms, such as diversity, independence and increasing/decreasing number of top managers, they do so without knowing how their actions influence firms' performance. Bøhren and Strøm (2007) also argue that there is limited empirical evidence investigating the validity of current regulatory practice.

The literature on the impact of the structure of corporate governance on firms' performance mainly focusses on four factors that significantly impact the effectiveness of any decision-making process (and consequently financial performance) within the corporate governance context. These factors are diversity (such as gender), board size, board compensation and board composition with emphasis on outside directors, (see Raheja, 2005; Coles *et al.,* 2008 and Harris and Raviv 2008). Within the Sudanese banking system, almost all the banks rely on internal members of the board. Additionally, data on the boards' compensation for these banks are limited, as not all Sudanese Banks' annual reports disclose this type of data. Therefore, this study, in light of these factors, focusses on the impact of gender diversity and board size on the financial performance of the studied banks.

8.2. Study Background and Theoretical Framework

There is a renewed and growing focus, within academic research, public discussion, government concerns and firms' strategy, on gender diversity in boardrooms and in top executive management positions, as a means of improving the performance of corporate governance. In western countries, some European countries have already taken steps to encourage gender diversification (Marinova *et al.,* 2010 and Cabo *et al.,* 2012). Cabo *et al*., (2012) also report that to encourage diversification many European countries have approved a regulation of minimum quotas for female representation on boards in public companies (e.g. Norway, Spain, France, Italy, Netherlands and Belgium). They also report that other European Union countries (such as UK, Sweden and Finland) have also adopted voluntary standards to encourage gender balance on boards. However, several studies show that, worldwide, female presence in both types of top management is still limited.

On the contrary, Carter *et al.*, (2003) report that participants at a forum sponsored by the Conference Board instantly vetoed the idea that board diversity, for its own sake and without consideration for a business case, is a satisfactory reason to act on or implement gender diversity policy.

Catalyst (2004) and Carter et al., (2007) report that the core of the economic case for board diversity can possibly be explained as follows:

Board diversity increases the effectiveness of board actions, which encourages the productivity and enhances the performance of the corporation, which will lead to improved profitability and shareholder value.

Carter *et al*., (2007) also argue that the economic case for diversity does not accept the diversity of directors as an ideal alternative to other effective board mechanism; however, such diversity of individuals with distinctive characters should add more value for shareholders. They also report that the economic case for board diversity is not a single construct stemming from a single theory, but more of an intuitive and pragmatic plan which originates from the business practice, opinions, anecdotal evidence, and empirical evidence.

Concerning gender representation in the banking sector, Berger *et al.,* (2012) report that such arranged governance in banking has deep consequences for their performance and the societies in which they are located. However, according to Cabo *et al.,* (2012) banking sector is more or less excluded from these studies and, therefore, very little is known about that governance structure and its impact on the banking industry.

Turning to the impact of board of directors' size on firm performance, the starting point for this research is the earlier studies of Lipton and Lorsch (1992) and Jensen (1993), who document the performance of smaller boards is more efficient compared to that of larger boards. They argue small boards are better monitors of management than large ones. They also argue that within large boards it is more likely to encounter coordination problems.

This chapter provides a comprehensive picture of the theoretical framework as well as findings of empirical studies on the impact of gender diversity in top management positions and size of the board of directors on firms' profitability. It also supplies the operational definitions of dependent and the independent variables

8.2.1. Corporate Governance and Gender Diversity

8.2.1.1 Corporate Governance

Francoeur *et al.,* (2007) and Dezső and Ross (2011) report that, as firms' top management make most of a firm's important decisions and strategies, a firm's performance and regular routine are the results of its top management characteristics and attitudes. Francoeur *et al.,* (2007) also report that, therefore, factors which would possibly enhance the performance of the corporate governance team should consequently advance firm performance.

Ntim (2009) reports that the term governance originates from the Latin word gubernare ', which means to steer, suggesting corporate governance entails the function of direction rather than control. Further definition of corporate governance is given by Campbell and Vera (2007, p. 436) who define corporate governance as ''*the system by which companies are directed and controlled''*.

More comprehensive definitions are given by Andres and Vallelado (2008) and Ansari and Siddique (2013). Ansari and Siddique (2013, p. 493) define corporate governance by the most cited definition, which is given by finance committee on corporate governance in Malaysia: "*Corporate governance is the process and structure used to direct and manage the business and affairs of the company towards enhancing business prosperity and corporate accountability with the ultimate objective of realizing long-term shareholder value, whilst taking account the interests of other stakeholders".*

Andres and Vallelado (2008, p.2571) define corporate governance as "a *group of mechanisms used by stakeholders to ensure that directors efficiently manage corporate resources, a task that includes the manner in which quasi-rents are developed and distributed"*. They also report that, according to the definition, the issue of bank governance does not impressively differ from the governance problem of any business which involves a trade in goods. Yet, they report corporate governance in banks plays a more specific role because of the distinctiveness of these organisations.

According to all definitions, the corporate governance role takes account of successful running of the business, supervising executive actions and satisfying the legitimate expectations of responsibility encompassing a sequence of instruments through which the requirements of management, the board of directors and all types of shareholders are assisted. Therefore, according to Campbell and Vera (2007), corporate governance plays an essential role in bringing together all different interests within the banking environment.

Further explanation showing the key functions of corporate governance, with emphasis on board of directors and how it can ultimately influence firms' performance, is given by Al-Musalli and Ismail (2012) who report that board of directors is an essential instrument to create, improve, leverage, and manage intellectual capital of a firm and influence its performance. Its function is to formulate relevant strategies and policies on how to acquire and optimally operate the required resources. Therefore, according to Robb and Watson (2012), decent corporate governance should enhance the attainment of developed financial performance of both private and public institutions.

Focusing on the role of corporate governance in developing countries, Robb and Watson (2012) argue this role is particularly essential as it assists in setting foundations for sustainable economic growth.

Turning to the role of corporate governance in a banking environment, Alexandrina (2011) reports that, due to the particular nature of banking industry, its corporate governance is documented to perform a different role from the one played by firms' governance. He attributes this difference to the particularities relating to the banking industry, which demands consideration of liquidity requirement, a complication of activities (interest-based operations, and non-interest based operations) and stakeholders' variety. All these special characteristics create, and increase, researcher's interest in examining the impact of corporate governance on banks' value. In the same context, Cabo *et al.,* (2012) report that considering banks are generally less transparent than firms, with potential systemic risks related to the nature of banking industry, corporate governance issues become even more important. In the same vein, Alexandrina (2011) comments on the need for more studies on corporate governance and bank performance, reporting that corporate governance within the banking industry is a little-explored topic, which supplies academics with an opportunity to develop the empirical literature through which they can examine the impact of such factor on banks' performance. However, Rose (2007) argues that due to the lack of data availability, studies on corporate governance in the banking industry are emerging at a slow pace.

8.2.1.2 Barriers for Women to Reach Top Management Positions

Adams and Ferreira (2009) report that the poor representation of females in top management positions is generally linked to a phenomenon known as 'glass ceiling'. This phenomenon is defined by Prete and Stefani (2013) as an unreachable barrier that keeps women and minorities from rising to the upper step of the corporate ladder, regardless of their qualifications or achievements. Another explanation of glass ceiling is given by Oakley (2000), Francoeur *et al.,* (2007) and Cabo *et al.,* (2012) as a set of transparent hindrances creates an obstructed barrier of procedures, structures, traditions, relations and beliefs which prevent a woman from accessing a management position past a certain point. Vieito (2012) comments that these glass ceiling obstacles do still exist and are

proven to have prevented women from reaching their full potential in top management positions.

According to Shrader *et al.*, (1997), the glass ceiling is an indication of the major obstacles created by men's beliefs that career women can easily be distracted from accessing top management positions due to family issues. In addition, Shrader *et al*., (1997) suggest women are not considered to have strong enough character, and that men are simply uncomfortable with women in these positions. As a result, women are intentionally stopped from being given top management positions instrumental in influencing firm performance. Further explanation of the reason behind these low numbers of women in top levels of management is given by Singh and Vinnicombe (2004) who suggest females' lack of ambition, commitment and experience are all main reasons for the limited representation of women at top management levels. Singh and Vinnicombe (2004) also report that these obstacles include informal and unseen top promotion processes stemming from the business culture that believes in old boys' networks and social exclusion. Informal barriers also include elements of tokenism and lower pay for women.

Concerning existence of glass ceiling in banking industry, Cabo *et al.*, (2012) report that, as the manager level increases in banking sector, the percentage of women among managers decreases, revealing a sizable gap between the percentage of women among bank employees and their existence among bank top level managers, indicating existence of glass ceiling theory at bank's level. However, Prete and Stefani (2013) discuss the glass ceiling theory in banking industry with optimism, reporting that, during and after the recent financial crisis, there has been a greater focus on gender diversity of banks' top management, as scarcity of gender diversity at this level of management is viewed as being among the reasons behind governance failure in financial institutions. This point could possibly be used to persuade supporters of this glass ceiling theory to change their minds and allow females to work side by side with males in top management positions, in the banking industry in particular, and firms in general.

In Sudanese banking industry, although there is no literature to support the existence of glass ceiling theory, which is often UK and US based, evidence on the existence of this theory in Sudanese Islamic Banking and society could be taken from the reality that some old established Sudanese banks refuse any employment of women.

8.2.1.3 Gender Diversity

Carter *et al*., (2003) define management diversity as the proportion of females and minorities on the board of directors. More specific and broader definition, focusing on gender diversity, is given by Smith *et al.,* (2006) in page 569 as "*the proportion of women among the highest-ranking CEOs in firms and on boards of directors".*

Turning to the debate on the impact of gender diversity on top management positions, Rovers (2010) reports that, whether the existence of women on the board enhances the governance of a company or not, is related to the question of what good quality corporate governance should attain. He also argues that if good corporate governance does not lead to better performance, then the question of who is positioned on the board of the firm has no practical value. Consequently, employing women on the board will simply have a symbolic value which adds no advantage to performance.

The impact of gender diversity on a firm's performance has been subject to much theoretical and empirical research. Some of these studies suggest that the impact of gender representation on the corporate board of directors and CEO levels should improve firms' performance, providing the steady growth of female representation in these positions as evidence (see Carter *et al.,* 2003; Adams and Ferreira 2008 and Pathan *et al.,* 2012). On the other hand, another literature supports a negative association between gender diversity and firms' performance (see Shrader *et al.,* 1997 and Smith2005). The argument on this aspect follows below.

8.2.1.4. The Link between Board Diversity and Firm Performance

Dezső and Ross (2011) report a number of different, but related, reasons to support the idea that diversity is connected to improved firms' performance. Rose (2007) Brammer *et al*., (2007), Kang *et al*., (2007), Campbell and Vera (2007), Rovers (2010), Pathan *et al.,* (2012) and Vieito (2012) propose different reasons to justify the existence of positive association between the greater representation of women in top management positions and increased firm performance. Firstly, Vieito (2012) reports many studies have described females and males as being dissimilar in several qualities and characteristics. According to Brammer *et al*., (2007), by excluding women from decision-making

positions, the company is structurally ignoring the qualities that are, by nature, distinctively, and only, found in women.

In the same context, Rovers (2010) argues a homogeneous group of directors does not represent the society in which it operates, which means weak corporate governance and a missed opportunity are more probable when women are not represented at these levels of management. In the same context, he reports that females behave differently than men in a variety of situations. Rovers (2010) further supports his argument by reporting the existence of women in the decision-making process may improve team performance, as the diversity in top management will lead to a wider range of perspectives and exchange of ideas. Accordingly, this will enhance better decision making and will consequently improve business performance. He also reports the absence of women in top management is suboptimal for the decision-making process and firm performance.

A further argument in this aspect is given by the critical mass theory, which is initially associated with earlier work of Rosabeth Kanter. This theory is explained by Rovers (2010) as being based on the idea that, only when a certain threshold is reached (a critical mass), the influence of a subgroup (such as the representation of females on the board) becomes more definite. Kramer *et al*., (2006) argue that 'a board with three or more females is more likely to achieve positive effects and enhance good governance than a board with fewer females'.

According to Rovers (2010), being the single female can lead to tokenism as men will remain the dominant group. In the same context, Joecks *et al.,* (2013) argue that skewed groups have a lower performance than balanced groups. They report that a sizeable effective minority should range between 20–40 % and will provide a critical mass that does bring change. They report this percentage will create balanced groups which advantageously enhance disparity of group members.

The argument of Rovers (2010) is also documented by Brammer *et al*., (2007), who report that some valuable qualities and characteristics are not distributed equally among males and females, causing behavioural differences between the two genders. An example of behaviour differences is given by Vieito (2012), who prove that females are more risk averse than males. In the same context, Prete and Stefani (2013) report that, due to their

higher risk aversion, credit policies are tougher when women are in top management positions.

Furthermore, Campbell and Vera (2007) suggest homogeneous groups are more cooperative and tend to more easily communicate, as they are more likely to share the same feelings and opinions. Additionally, Carter (2003) Pathan *et al.,* (2012) report that the representation of female directors is becoming more favourable because there is a perception that females are hard-working and able to enhance innovation and problem-solving through their distinctive communication skills. Pathan *et al.,* (2012) also argue that female directors are highly proficient and diligent, have better anticipations about their duties as directors and are better organised and prepared for board meetings. In the same context, Shrader *et al.,* (1997) report that females are more oriented and stronger in the areas of maintaining relationships, and generating and innovating ideas, than men.

That aside, Carter *et al*., (2003) also report corporate diversity helps better understanding of the marketplace. They report that when the marketplace becomes more diverse that such greater corporate diversity increases the ability to reach potential markets.

A further advantage of females' representation in top management positions is discussed by Rovers (2010), who reports that companies with a higher degree of diversity on the board also send an essential positive signal to their existing and potential employees about the fair competition through which top positions are filled. Accordingly, free competition among staff will improve firm performance. In addition, Dezső and Ross (2011) argue female representation in top management is the main cause of informational and social diversity, which benefits the top management team and enriches the behaviour of different levels of management throughout the firm. As well as this, it inspires women in middle management, resulting in improved managerial performance and, consequently, better firm performance.

Rose (2007) also argues that, as firms are important institutions, they no doubt influence a wide range of stakeholders and wider society, so they should be sufficiently diversified to reflect society and the market as a whole. Finally, Rovers (2010) reports that society normally views any higher degree of diversity in management as positive, which will develop that firm's reputation and consequently its performance.

According to all different previously mentioned arguments, the inclusion of distinctive characteristics and behaviour of females is argued will enable top management to access their potential talent, and use it to make improved and valued decisions, which consequently leads to better financial performance.

On the other hand, Rose (2007), Vera (2007), Campbell and Vera (2007), Adams and Ferreira (2009), Rovers (2010) and Dezső and Ross (2011) discuss the disadvantages of gender diversity in top management. Firstly, they argue that a wider range of different perspectives can also delay decision-making process and make the board more divided, which results in more conflict and time consumption problems.

In the same vein, Smith (2005), Campbell and Vera (2007) and Rovers (2010) report that if greater gender diversity among top management positions generates wider range of opinions and critical questions leading to greater conflict, consequently the decision-making process becomes more time consuming, as well as less effective, which may lead to more conflict than within a less heterogeneous group.

Smith (2005) argues that, although this conflict may end with better quality decisions, this may not balance the negative impact of a slow decision-making process, especially when the market requires quick reaction to changes of market issues. He reports that, although a heterogeneous board yields a wider range of different opinions and critical questions, this may not be as effective as a homogenous group of directors. Rovers (2010) also reports that coordination problems and reduced cost efficiency resulting from top management diversification can counterbalance the increase in financial performance.

Further reasoning on the possible negative relationship between gender diversity and firms' performance is given by Adams and Ferreira (2009) who suggest that although gender diversity on boards leads to tougher monitoring, normally considered a beneficial and distinctive characteristic, intensive monitoring may possibly be considered as a disadvantage as it leads to counter-productivity. An example of such counter-productivity is given by Dezső and Ross (2011) who report that gender diversity may possibly impact social cohesion and, consequently employee satisfaction. However, he argues that any dissatisfaction in this respect does not necessarily lead to sub-standard performance.

In the same context, Vera (2007) also reports that if women are involved in the top management decision-making process for the sake of social pressure for greater equality of the sexes, without consideration of their skills and experience, women's representation results in a negative impact on the decision-making process and consequently firms' financial performance. Furthermore, Campbell and Vera (2007) argue that, in some societies, investors penalise firms which increase their female board membership, should this negatively impact the economic gains of these firms.

Further opinion on the impact of gender diversity on firm performance is given by Cabo *et al.,* (2012) who report such impact on a firm's financial performance can, to some extent, depend on different internal and external conditions of the firm. They report that the value and the effectiveness of corporate governance practices (e.g. increased board diversity) could depend on firm's size, age and the regulatory constraints on business performance. They also report that for newly established firms, the resourcing and behaviour of board members is comparatively more vital than the monitoring roles of the board. Conversely, when a firm is grown in size it needs more external resources, which consequently makes board gender diversity more important.

That aside, Rovers (2010) reports that, even though studies have already proved a relationship between the existence of females in top management positions and firm performance, it is difficult to provide evidence on the causal relationship between these two factors, due to the number of factors affecting the performance of a firm, making single factor research problematic.

Overall, Francoeur *et al.,* (2007) report that whatever the debate on the impact of gender diversity on firms' performance, the promotion of women to top management positions must remain a good policy and sensible objective, even if it does not essentially lead to better financial performance. To be precise, important social issues, such as family life and flexible work arrangements, are taken into consideration by firms which implement policies to attract women executives and board members. According to them, the impact of some issues relating to family life requirements and flexible work arrangements must be taken into consideration, as shown by the experience of companies that had already implemented policies to attract female executives and board members.

8.2.1.5. Corporate Board Size

The Theoretical link between board size and firms' financial performance has been subjected to studies since the pioneering research of Lipton and Lorsch (1992) and Jensen (1993). The extended literature on this topic has sought to give a theoretical and empirical argument on the relationship between corporate board size and firm financial performance. The empirical evidence on this is shown to be inconclusive.

The theoretical argument, which encourages employing a smaller number on the board of directors, has been discussed extensively in the literature. Lipton and Lorsch (1992), Eisenberg *et al*., (1998), Haniffa and Hudaib (2006), Harris and Raviv, 2008), Saravia (2010) and Robb and Watson (2012) are all examples of literature focussing on and providing a variety of arguments on this issue. Eisenberg *et al.*, (1998) and Saravia (2010) provide a comparison between larger and smaller board sizes. They report that large boards are more likely to suffer from coordination, communication, and other decision-making process problems than boards of a smaller size. According to them, small boards are better monitors of management than large ones. Accordingly, they argue that the performance of larger boards should be less efficient compared to that of smaller boards. This argument is supported by Robb and Watson (2012) and Bøhren and Strøm (2007) as they report that the larger board will challenge the interactive discussion during board meetings. This is due to board members taking longer to come to a decision, as well as preferring to make more conventional decisions than smaller boards. Bøhren and Strøm (2007) also argue that larger boards lessen board's creativity and decisiveness. In the same context, Lipton and Lorsch (1992), Eisenberg *et al.,* (1998), Haniffa and Hudaib (2006) and Harris and Raviv (2008) provide arguments for a positive association between smaller board size and firm performance. Lipton and Lorsch (1992) and Harris and Raviv, 2008) report that within smaller board size all directors are more capable to comfortably contribute to the discussion during their meeting, therefore, smaller boards are more likely to be characterised by cohesion, and to enter into more effective discussions than bigger boards. Further reasoning supporting the employment of smaller boards is given by Eisenberg *et al.,* (1998) who report that enlarging the board increases CEO control and lessens the board's ability to resist CEO's undesirable decisions which will consequently, according to Haniffa and Hudaib (2006), make the board more symbolic than effective in the management process. Consequently, they suggest, this leads to agency problems

emerging from the separation of management and control. The argument on the negative impact of large board size is also supported by Robb and Watson (2012) who claim larger boards undermine cost minimisation, as it is correlated with higher expenses, in terms of directors' salaries and remuneration, than smaller size boards.

On the other hand, Coles *et al.,* (2008) cast doubt on the idea that smaller boards are necessarily ideal for all firms, as larger boards could possibly offer better advice to the CEO. By mentioning this, Coles *et al.,* (2008) link the number of board directors proportionately to firm size. In this context, Lipton and Lorsch (1992) report that due to cost issues, general board size should range between eight and nine directors. They claim that board size beyond this range will be linked to lower managerial gain for the incurred cost. Additionally, Eisenberg *et al.,* (1998), who document negative correlation between board size and profitability of small firms, and small boards in Finland, report that, in small firms, there is sometimes a tendency to employ relatives to the board, despite the fact that such employment may not increase the board value.

Further discussion on the impact of board size on financial performance is given by Haniffa and Hudaib (2006), Yawson, (2006) Abeysekera (2010) and Al-Musalli and Ismail (2012), who provide opinions that stand for positive relationship between a large corporate board and financial firm performance.

Al-Musalli and Ismail (2012) support a positive relationship between the larger size of a board and performance, arguing that there is a greater expectation for larger boards to consist of a greater number of experts, with varied business and educational backgrounds, talents and skills which improve board's tasks. These characteristics will consequently improve the quality of policy, strategy, decisions and actions taken by any board. Abeysekera (2010) argues that when a larger board is employed, it is more probable it will increase firms' ability to acquire and protect critical resources. He also reports that a larger board is more likely to contribute to providing better interrelationships between a firm and its external stakeholder groups, and providing a better image for the firm in society. Furthermore, Haniffa and Hudaib (2006) suggest larger boards are possibly more productive. They justify this positive relationship by reasoning that larger boards are more capable of providing a diversity of experience and skills, which aid companies' ability to wisely utilise their critical resources and lessen environmental uncertainties. This opinion

is supported by Yawson, (2006) who argues that larger size of the corporate board is more likely to supply the company with a wider range of knowledge backgrounds, on which important decisions and advice can be based.

Further opinion is given by Robb and Watson (2012) to the effect that the size of the board should not be too large, as this will challenge an interactive discussion during board meetings and undermine deliberations and cost minimisation. It should also not be too small, as the presence of a small number of skilled expertise will negatively impact board decisions and performance. They report that the impact of board size could possibly influence the financial performance of banks, either positively or negatively.

The additional argument on optimal board size is given by Xie and Fukumoto (2013) who assert that the relationship between a firm's performance and the board size is not as simple as earlier thought. They report that empirical evidence on the association between firm performance and board size is strongly influenced by the characteristics of the studied firms. This has been explained by Larmou and Vafeas (2010) as the relationship between board size and firm performance not being a monotonous relationship. Their opinion supports the existence of an optimal range of board size, meaning that increasing the number of board directors only enhances firm performance when the board size is very small, although it will negatively impact the performance if board's size increases beyond a certain point.

A further argument is given by Coles *et al*., (2008) who believe that for certain types of firms, larger boards increase firm value. They report that generally, there are two types of firms, simple and complex, each type having distinctive optimal board size. They argue that complex firms, such as those that are diversified, large or those that largely depend on debt financing, are normally characterised by having greater advising needs. For this reason, a larger board provides more experience, knowledge and, consequently, better advice. According to Coles *et al*., (2008) complex firms should employ larger boards of directors to ensure diverse advice and expertise are provided to the CEO, which should improve firm's performance.

Coles et al (2008) report that, depending on the differences between complex and simple firms, the relationship between firm value and board size is U-shaped, meaning that either

very small or very large boards can be optimal for companies' performance. In contrast, Xie and Fukumoto (2013) document that the relationship between board size and firms' performance can be illustrated by a hump-shape, suggesting a bigger board size may only be worthy for companies under certain conditions. They report that companies with smaller board size enjoy a good quality of the board's monitoring and advising. However, as the number of board member's increases above a certain number, the competence and capability of the board decreases, and firm performance deteriorates. This means the advantage of extending the board continues to apply up to a certain limit as the board size increases, then the descending hump shape begins to form.

Coles et al (2008) also discuss the difficulties of adjusting the board size to the optimal size. They report that if a firm need to adjust its board size, for the benefits of its performance and value, it must consider the transaction costs of shifting to the new board structure, and specify some appropriate control variables, through which they can manage the advantages of the targeted board size. They also report that if the transaction costs are significant, and could possibly impact the performance negatively, firms could deviate from their optimal board size and structure. In such a situation, complex firms are likely to have smaller boards than the optimal. Coles *et al* (2008) report as costs related to adding a board member are not modest, this could prevent companies from employing more board members. Therefore, companies may need to continue working with suboptimal board size for the sake of extending the period of time in which it needs to employ a new board member, and consequently, reduce the expenses of filling seats on the board of directors. They also report that, for a newly founded firm, it could take time before it is ascertained which members of the board have the necessary skills.

Coles et al (2008) also discuss the argument on the optimal size of the board of directors and performance for newly established simple firms. They report that transaction and contracting costs could possibly obstruct board of directors downsizing. Firstly, the process of electing a new board member to restructure the board size could possibly hinder downsizing. Secondly, when a company employs a new board member, the company creates an embedded contract with that director, that he will not be fired unless he performs poorly. Therefore, shedding a director from his job for reasons of board downsizing may negatively impact the company's reputation, making it more difficult for the firm to employ qualified directors in future. Thirdly, the company may bear legal costs

for removing a director before the completion of his or her contract. Accordingly, when a company decides to downsize its board of directors, it first needs to identify who needs to be fired, and then wait until his or her contract is over. Therefore, there will be an interim before the company can reach the optimal board size. In this context, Dahya *et al.,* (2002) and Coles *et al.,* (2008) report that companies prefer to employ outside directors, to lessen the possibility of firing inside directors and the ensuing consequences.

Additional discussion on the optimisation of board size is given by Bhagat and Black (1999), reporting no consistent relationship between board size and the performance of American public companies, as measured by ROA and Tobin's Q. They conclude that board size is obviously determined by factors such as inside share ownership, firm size, type of industry and board independence, and such factors having the greatest influence in determining firm performance. Bhagat and Black (1999) also report that if the impact of board size on firm performance is not clearly identified, conventional wisdom calls for supermajority-independent (directors from outside) boards and, therefore, managers and directors may easily decide to meet investor demand to satisfy them.

Overall, the above mentioned discussion represents controversies related to the size of board of directors, which make it possible to appreciate the argument of Alexandrina (2011), who states there is an optimal board size which differs across firms and over time and, therefore, a particular size of board can have a positive or negative influence on any firm’s performance.

Within Islamic Banking Industry, the impact of board size on performance has been neglected and this calls for investigation into the impact of this on the Sudanese banking industry, the Islamic banking industry in particular. It should be mentioned that the number of board directors of in the examined banks ranges from a minimum of 5 to maximum of 16, which gives an opportunity to investigate and find the impact of board size on the performance of these banks

8.2.2. Empirical Studies on the Impact of Top Management Gender Diversity and size of Board of Directors on Financial Performance

8.2.2.1. Empirical Studies on Gender Diversity, Board size and Firms' Performance

Turning to the empirical studies on the impact of gender on top levels of management and size of the board of directors, some studies focus on the influence of female diversity on firms' boards of directors. Other types of studies focus on the impact of female representation within top departmental management. Some studies investigate the impact of a female CEO, whilst others are extended to include, and examine, the impact of (CEO) and vice-directors due to the limited number of female top CEOs. Further studies highlight the impact gender diversity has on top management, covering both boards of directors and CEOs of firms in general.

It should be noted that the impact of board size on business performance is a common factor in all these types of studies. Findings of all types of studies are inconclusive, as some of them prove a positive association between the studied factors and performance, whilst few provide evidence that shows a negative, or even no association, between these factors and performance. Following is a summary of all these types of studies.

Among the first to investigate and support the argument for women in top management in the western countries, are Shrader *et al.,* (1997), Carter *et al.,* (2003) and Catalyst (2004) who investigate the association between gender diversity and US firms' performance. Shrader *et al.,* (1997) use ROA, ROE and profit margin to investigate the impact of gender diversity, of departmental managers and board of directors, on the performance of 200 large U.S. firms. Their findings prove either insignificant or, in some cases, a negative and significant impact of gender diversity at top management level. They justify the insignificant impact by reasoning the limited representation of females at top management levels weakens their impact on firm performance. They also report that another possible reason for this relationship could be because females have not been employed as departmental managers, or on boards of directors', for enough time to enable measurable impact.

Using Tobin's Q as a performance measure, Carter *et al.,* (2003) focus on Fortune 1000 firms for the year 1997 and find significant positive relationships between the fraction of

women on the board of directors, and firm financial value. They also prove that the percentage of women on boards increases with firm size and board size, but decreases as the number of insider directors increases. Their findings also propose that firms making a commitment to raising the number of women on boards are also those firms with more ethnic minorities on their boards, and vice versa.

Catalyst (2004) also finds evidence that companies with greater diversity attain better financial results. Later, Catalyst (2007) also utilises various financial ratios of a sample of 520 US firms' data, to investigate the performance of their board directors, with or without female representation. He uses ROE, ROC and returns on sales (ROS) between 2001 and 2003. He classifies the sample according to the average percentage of women on those companies' boards and divides the companies into four groups of 130 companies for each group. He compares the financial performance of companies in the top group, which are those with the higher percentage of females on their boards, with that of the performance of companies in the bottom group, which are the companies with the lowest percentage of women on their boards. His findings show the financial performance of the top group is at least 41 percent higher for return on sales, and 64 percent higher for return on capital, compared to that of the bottom group. Catalyst (2007) reports that the relationship between the existence of women on the board, and financial performance of these companies, does not essentially imply a causal relationship between these two variables. It may also be worth mentioning that he does not investigate the statistical significance of the performance differences.

Smith (2005) focuses on gender diversity, at both boards of directors and departmental management levels, of the 2500 largest Danish firms, Denmark being considered as one of the countries with the highest proportion of women in the worldwide labour market. He uses data over the 1993-2001 period, and the ROA and the Gross value added/net turnover as performance measures, to investigate the impact of the proportion of female departmental managers and female directors on firm performance. He finds a negative association between the existence of females on the board of directors and performance measures, which he justifies by reasoning that a large proportion of women on boards have family ties to the owners. His findings also show that the impact of higher representation of women as departmental managers on the performance measures varies from nil to positive impact. Smith (2005) also finds that female members of boards of

directors who are elected by staff members appear to have positive effects on firm performance.

Rose (2007) does not find any significant relationship between firm performance, measured by Tobin's Q, and female representation on the board of directors of listed Danish firms during 1998–2001 period. With respect to board diversity, he finds that foreign managers mostly, and unconsciously, support the ideas of the majority of traditional board members, which makes it impossible for potential performance of female representation to become realised. He also found that in spite of the reality that the country's law has already established the liberalisation of women policy, Danish boards of directors and executive management are still, to a great extent, dominated by men.

Campbell and Vera (2007) examine the relationship between gender diversity on the board of directors and firms' financial performance in Spain. They also investigate the causal relationship between gender and firm performance. They find a positive impact of female representation on boards, as measured by the ratio of women to men, and ROA and Tobin's Q. However, they find an insignificant relationship between the two performance measures and the gender existence when measured by a dummy variable. Campbell and Vera (2007) also find that in firms of bigger size and larger boards, there is a greater probability of female representation**.**

Francoeur *et al.,* (2007) use a sample of US firms during 2001 to 2003 to investigate whether the participation of women in the firm's top management enhances financial performance, as measured by ROA. They prove positive and significant impact on ROA exists for firms operating in complex environments when they have a high proportion of women officers in their management and governance systems. This indicates, they argue, that firms with a high percentage of females on the board of directors and CEOs levels create enough profit to keep up with average market returns.

Bøhren and Strøm (2007) use Tobin's Q as a performance measure to estimate the impact of gender diversity on the performance of Norwegian listed non-financial firms. They prove significant adverse relationships between small boards and firm performance, as well as between gender diversity on boards of directors and firm performance.

They report that the negative relationship between gender diversity and performance measure is due to more diversified boards being less effective in decision making. They justify the negative relationship between board size and performance measure by the higher expense related to employing larger boards of directors. Bøhren and Strøm (2007) also find that boards with low gender diversity are smaller in size, and have less age diversity.

Adams and Ferreira (2008) use ROA and Tobin's Q to investigate the impact of gender diversity on the board of Standard & Poor US firms for the period 1996-2003. They find that in years in which firms have women on their boards; firms are larger in size, have more business divisions, have better performance in terms of ROA, and have larger board size than firms without female directors. However, they find that firms with female representation have worse performance, in terms of Tobin's Q than firms without female directors. They also find an adverse relationship between gender diversity, of the board, and Tobin's Q. Adams and Ferreira (2008) also provide evidence that female directors behave differently than male directors, for instance, they are proven to have better attendance records.

Larmou and Vafeas (2010) study a sample of smaller size western firms with a history of modest performance, from a database of Compustat active and research files for the period 1994-2000. They present evidence supporting a positive impact of enlarging board size when it is significantly smaller.

Ahern and Dittmar (2011) investigate the impact of new legislation in Norway which, in 2003, required 40 percent of Norwegian firms' top management to be women. At the time, only nine percent of directors were women. They find that the change in the percentage of top managers with higher education degrees is larger for firms that faced a greater constraint from the quota. They also find that consideration of CEO duration of previous experience is considerably decreased as a result of the new gender quota. Ahern and Dittmar (2011) also prove that the personal characteristics of board members, such as education and previous experience, are clearly related to their advisory role. They also find that the new female directors are significantly less CEO experienced, more highly educated, and more likely to be employed as a non-executive manager, compared to retained male directors. Interestingly, their result shows no changes in the board size as a

result of the quota. This is interpreted as the quota may have been met by firms only adding new female directors as it was optimal for them to maintain the same size of the board of directors at the cost of replacing male directors. With respect to finding the impact of the application of the new gender legislation, Ahern and Dittmar (2011) document that firms have gained less accounting returns following application of the quota which, according to them, indicates those boards of directors are less efficient as monitors and advisors.

Dezső and Ross (2011) use 15 years' data, of a sample of 1,500 U.S. public companies, to investigate the impact of the existence of females in the middle management level on firms' performance. They use ROA, ROE and Tobin's Q, as performance measures, and prove a positive and significant association between firms' financial performance and female representation in top management, when firms' strategy is focused on innovation. They also examine the impact of firm size, as measured by total assets, firm age, leverage and number of managers on the top management team. They also find that size and leverage are negatively and significantly related to firm performance. On the other hand, they prove a positive and significant association between firm age and performance.

Navarro and Gallo (2014) utilise Enterprise Surveys Data from the World Bank to study the effect of employing female CEOs, and other employees' characteristics, on ROA, ROE and Tobin's Q. Their study documents a positive effect of female CEOs on firm performance. They also prove those females are not less risk-taking than men, in administrating firms. Furthermore, Navarro and Gallo (2014) prove positive association between female CEO and other female job opportunities. Interestingly, an indication of some regional effects is found by their study, as female managers of companies located in the East Asia-Pacific region and Eastern Europe and Central Asia were found, on average, to perform better than men, whilst opposed relationship is found in companies located in Iraq, Afghanistan, Nepal and Sri Lanka.

Vieito (2012) examines whether ROA of largest US 1,500 public companies during 1992 to 2004 is affected by the gender of CEO and vice-presidents. They find firms with a female CEO and vice-president, perform better than companies managed by a male CEO in these positions.

Campbell and Vera (2007) find a positive impact of female representation, as measured by the ratio of women to men on the board of directors and firm value, in Spain. However, they find an insignificant relationship between the two variables when gender diversity is measured by a dummy variable. Additionally, they find the insignificant impact of the causal association between performance and gender representation in top management. Campbell and Vera (2007) document that greater gender diversity in firms located in Spain creates economic gains for these firms. They also find that investors do not penalise firms which raise the number of female board membership.

Rovers (2010) uses ROE, stock price growth and the dividends paid, to examine the performance of 99 listed Dutch companies, both with and without women on their boards of directors. He proves that higher ROE of companies with women on the board is more consistent than for companies without women on the board, meaning that firms with women board directors perform better than those without.

Studies focusing on the relationship between the board of directors' size and firm performance, starts with the earlier study of Yermack (1996) who examines the association between board size and financial performance in a sample of 452 large US industrial corporations for the period 1984-1991. He documents a negative association between corporate board size and performance, as measured by Tobin's Q. He also found that companies with small boards' size are proven to have better values in terms of financial ratios. Findings of some recent studies on US based firms (see Cheng, 2008; Coles *et al*., 2008 and Cheng *et al*., 2008) and non-US evidence (see Xie and Fukumoto, 2013; Guest, 2009 and Bozec, 2005) are all in line with those of Yermack (1996).

Bhagat and Black (2002) investigate the relationship between board size and the performance of 934 US largest firms between 1985 and 1995. They use ROA and Tobin's Q as performance measures and find no regular association between the two factors.

Coles *et al.*, (2008) study a sample of 8,165 observations from US Execucomp Compact Disclosure and Investor Responsibility Research Centre over the period 1992–2001. They document that firm value, as measured by Tobin's Q, is positively associated with board size in complex firms. They report that the main reason for the positive relationship is that bigger boards provide a valued recommendation to the CEO and management team.

Sanda *et al*., (2005) also provide evidence supporting a positive relationship between board size and ROA, ROE and Tobin's Q of 93 Nigerian listed firms during 1996-1999. They argue larger boards provide a wider range of advice as well as aiding securing firms' critical resources.

Haniffa and Hudaib (2006) focus on the performance of eastern countries, by using ROA and Tobin's Q as the performance measure, to examine the relationship between board size and performance of Malaysian listed companies. Their findings prove the positive relationship between ROA and larger boards, as it is thought to aid the firms' diversity in contacts and expertise needed to improve performance. However, it provides a negative relationship between board size and Tobin's Q. They document that, according to investors' perception, larger boards are less effective in monitoring performance, and may possibly cause a firm to incur more cost to meet directors' compensation.

Xie and Fukumoto (2013) use data on 798 Japanese companies during 1995 to 1998 to examine the relationship between firm performance and board size. They find a positive and significant association between ROA and small board size, and a negative and significant connection when the board size is large. Their findings suggest that board size may significantly depend on the individual characteristics of firms used in any given analysis.

8.2.2.2. Empirical Studies on Gender Diversity, Board Size and Banks' Performance

Although the literature provides various surveys on the impact of gender on firms' performance, Pathan *et al.,* (2012) report that studies on the impact of board size on banks' performance are worth doing as the existing literature on their impact is contradictory and inconclusive.

Studies on bank performance in the western countries can be seen in Adams and Mehran (2005), Smith (2005); Gulamhussen and Santa (2010); Alexandrina (2011); Alexandrina (2011); Adams and Mehran (2011) and Prete and Stefani (2013).

In the context of studies focusing on the relationship between banking industry performance and the size of the board of directors, Adams and Mehran (2005) use a sample of 35 US listed Banking firms for the period 1959-1995. Their results bring

evidence of a positive and significant association between board size and Tobin's Q. They also suggest that minimising board size to improve firm performance may impact adversely.

Gulamhussen and Santa (2010) use data from 461 large banks in Norway, Sweden, Spain and France to assess the role of women in bank boardrooms. They document that the presence and percentage of female presentation in boardrooms positively impacts ROE, ROA and operating income of these banks. However, they prove a negative association between females' presence in boardrooms and risk-taking measures, namely loan loss reserves, loan loss provisions and impaired loans ratio.

Alexandrina (2011) examines the impact of gender diversity in executive management and board of directors, and board size, on the ROE and ROA of Romanian banking system. He finds that board size has an insignificant impact on these banks. He also documents the positive and significant impact of gender representation on both ROA and ROE, and proves that gender representation on boards of directors has a positive and significant impact on ROE, but insignificant impact on ROA.

In the context of U.S. banks, Pathan *et al.,* (2012) use a panel of 212 large banks during 1997-2004 to investigate the impact of board size and gender diversity in boards on the performance of US banks. They use ROA, ROE, NIM, Tobin's Q, pre-tax operating income and stock return. After controlling for relevant sources of endogeneity, they prove a negative association between the board size and banks' performance. Concerning empirical findings on the impact of gender diversity, they prove that gender diversity in the boardroom improves bank performance.

Prete and Stefani (2013) provide evidence showing no impact of gender diversity on both boards of directors and executive committee level on Italian Banks' performance. They also examine the influence of the gender gap in top management positions and prove the existence of a "second glass ceiling" within the Italian Banking industry. Their findings also show that the number of women at top management level is greater in banks belonging to the major banking groups, whether their board size is big or not. They also prove that female representation is greater in banks that are more cost efficient, and in those with a larger share of risky loans in the past.

Reinert *et al.,* (2015) investigate the impact of the percentage of females among all managers, including senior executives as well as members of the board of directors, on Luxembourg Banks' performance for the period 1999-2013. They prove a positive relationship between female representation on the banks' top management and ROE of these Banks. They also prove that the nature of the positive relationship has even doubled during the global financial crisis.

Andres and Vallelado (2008) use two performance measures, ROA and Tobin's Q to investigate the impact of board size on the performance of a sample of large international commercial banks. They document an inverted U-shaped association between bank performance and board size, also proving that board size of a bank is linked to directors' ability to monitor and recommend advice for business management.

Dutta and Bose (2006) explore the nature of the impact of the presence of women on the boards of directors on ROE and ROA of commercial banks in Bangladesh during 2002-2005. They find that there is no significant difference between the performance of Bangladesh commercial banks with or without gender diversity.

Robb and Watson (2012) examine the impact of gender diversity and number of board members on the financial performance of Kenyan Commercial Banks. They found that the gender composition of the boards is positively and significantly related to the financial performance of Kenyan commercial banks. They further find that the number of board members is negatively and highly significantly related to the financial performance (returns on capital) of Kenyan commercial banks.

Nyamongo and Temesgen (2013) use 37 commercial banks' data from Kenya over the period 2005-2009 to examine the impact of board size on their ROA and ROE. They prove the inverse relationship between large board size and ROA, whilst no impact is proved with ROE. A similar result is obtained by Robb and Watson (2012), who examine the impact of board size on the financial performance of 16 Kenyan commercial banks during period 1990 to 2005, and find the number of board members is negatively and highly significantly related to the financial performance, as measured by returns on capital. Robb and Watson (2012) also find that the gender composition of the boards is

positively and significantly related to the financial performance of Kenyan commercial banks.

In the context of Middle Eastern countries, Tai (2015) investigates the impact of board size on the ROA of 57 publicly listed national GCC banks for the period 2011 to 2013. The results document that board size has a positive impact on ROA.

Al-Saidi and Al-Shammari (2013) use the OLS to investigate the influence of board size on the performance of a sample of nine listed Kuwaiti banks during 2006 to 2010. They find that board size negatively impacts bank ROA of Kuwaiti bank, suggesting smaller boards are probably easier to coordinate and enable better communication between members, which leads to better monitoring and reduced risks, consequently enhancing banks' performance. Nevertheless, their findings show the insignificant relationship between board size and Tobin's Q, indicating that board size is not seen by the market as linked to better performance.

Shorouq Tomar and Bino (2012) use ROA and ROE to examine the impact of board size on a sample of 14 listed Jordanian Banks during period 1997 to 2006, using a linear regression analysis. They document that board size has no influence on the performance of the examined banks.

In the Islamic banking context, some studies focus on the impact of board size on the performance of these banks, but further to the researcher's knowledge, there is no previous study on the relationship between gender diversity and profitability performance of Islamic banks.

Ansari and Siddique (2013) utilise regression analysis to examine the performance of Islamic and conventional banks, using 10 Pakistani banks during 2008 to 2012. Their findings indicate board size has no significant impact on ROA of these banks

Bukhari *et al.,* (2013) explore the impact of boards of directors on 17 Pakistani banks using questionnaire. Their findings prove that the most important factors impacting the corporate governance performance in Islamic banks in Pakistan are boards of directors and Shari'ah supervisory board.

On the contrary, Li *et al.,* (2014) examine the influence of board size on Islamic Banks' performance as measured by ROA, ROI and Tobin's Q. Their findings prove that Islamic Banks are more likely to have better financial performance if board size is bigger.

In conclusion, Bhagat and Black (1999) and Campbell and Vera (2007) suggest that contradiction in empirical evidence on the impact of gender diversity and board size on firm performance may possibly be explained as follows:

Firstly, the studies are related to different periods of time and to different countries, therefore, the influence of gender diversity and board size may depend on the time period and on the institutional context. Secondly, the adopted methodology impacts studies' findings. Smith (2005) and Campbell and Vera (2007) suggest that inconsistent findings may be due to the different estimation methods used by different researchers. Thirdly, according to Campbell and Vera (2007), some studies used no control variables (such as firm size industry, inside share ownership, firm size and leverage) as well as ignoring other unobserved factors impacting firm performance. Smith (2005) reports that such variables may correlate with corporate governance aspects, and may consequently bias the result if not controlled for.

Tables 8.1, 8.2 and 8.3 summarise findings of previous studies on the impact of board size and gender diversity of corporate governance on financial performance.

Table 8.1: Studies on the Impact of Gender Diversity of Corporate Governance on Financial Performance.

Study	Factors and Findings	Sample	Performance Measure
US:			
Shrader *et al.*, (1997)	Female board of directors (-) and senior managers (varied from negative to insignificant)	200 large U.S. firms	ROA, ROE, ROS, return on and profit margin
Yermack (1996)	board size (-)	452 large US industrial corporations for the period 1984-1991	Tobin's Q
Carter *et al.*, (2003)	Female on board (+)	Fortune 1000 firms for the year 1997	
Dezső and Ross (2011)	Female on senior managers (+)	1,500 U.S. public companies during 1992-2006	Tobin's Q as
Francoeur *et al.*, (2007)	gender in the firm's board of directors (+)	US firms during 2001 to 2003	ROA, ROE and Tobin's Q,

	and senior management (+)		
Vieito (2012)	largest US 1,500 public companies during 1992 to 2004	Gender of CEO and vice-presidents, firms with female managers perform better.	ROA
Pathan *et al.*, (2012)	board size (-) and gender diversity in boards (+)	212 large banks during 1997-2004	ROA
Bhagat and Black (2002)	board size (no impact)	934 US largest firm during 1985 and 1995.	ROA, ROE, NIM, Tobin's Q, pre-tax operating income and stock return.
Coles *et al.*, (2008) 1992–2001.	Board size, U shape	R and D firms during 1992–2001	ROA and Tobin's Q

Adams and Mehran (2005)	board size (+)	35 The US listed Banks for the period 1959-1995.	Tobin's Q
Europe:			
Smith (2005)	CEO and Vice president (+) and on Board (+)	2500 largest Danish firms during 1993-2001	ROA, ROE, NIM, Tobin's Q, pre-tax operating income and stock return.
Rose (2007)	Females on Board	Danish firms during 1998–2001	Tobin's Q
Campbell and Vera (2007)	Females on Board, varied from (+ to -)	68 Spain firms during 1995 to 2000	Tobin's Q and ROA
Gulamhussen and Santa (2010)	Females on Board (+)	461 large banks in Norway, Sweden, Spain and France	ROE, ROA and operating income
Alexandrina (2011)	Female CEO (+), female on board of directors (+) and	Romanian banks during 2010	ROE and ROA

Prete and Stefani (2013)	board size (insignificant) gender diversity on both board of directors and executive committee (no impact)	Italian Banks during 1995-2010	ROA
Reinert *et al*., (2015)	gender on top management position (+)	264 Luxembourg Banks during 1999-2013	ROE
Eastern countries: Dutta and Bose (2006)	gender diversity on the board of directors of (no impact)	15 of Bangladesh commercial banks during 2002-2005	ROE and ROA
Sanda *et al*., (2005)	board size (+)	93 Nigerian firms during 1996-1999	ROA, ROE and Tobin's Q
Haniffa and the performance of Malaysian listed companies	board size, (+) on ROA, (-) Tobin's Q	347 Malaysian listed companies during 1996 and 2000	ROA and Tobin's Q

Nyamongo and Temesgen (2013)	board size, (-) on ROA, no impact on ROE	37 commercial banks Kenyan during 2005-2009	ROA and ROE
Tai (2015)	board size (+)	57 publicly listed national GCC banks for the period 2011 to 2013.	ROA
Al-Saidi and Al-Shammari (2013)	board size, (-) on ROA and (+) on Tobin's Q	Nine listed Kuwait banks during 2006 to 2010	ROA and Tobin's Q
Shorouq Tomar and Bino (2012)	board size (no impact)	14 listed Jordanian Banks during 1997 to 2006	ROA and ROE

8.3. Operational Definitions of Variables

8.3.1. Dependent Variables

Marinova (2010) and Navarro and Gallo (2014) report that there are two key types of performance measures widely applied in corporate governance research: market-based measures (e.g. Tobin's Q and portfolio returns), and accounting measures (e.g. ROE,

ROA and ROI). In this context, Gjerde *et al.*, (2008) and Ahern and Dittmar (2011) comment on the usefulness of utilising the accounting measures, by reporting that changes in accounting rules make this type of performance measure less consistent than market-based performance measures. However, such measures remain widely used in corporate governance literature as they reliably reflect firms' financial performance.

In the Sudanese Islamic Banking context, the available data lacks the required information to apply market-based indicators; however, the accounting measures are still the main target of this research. Following Shrader *et al*., (1997), Smith *et al.*, (2005), Catalyst (2007), Adams and Ferreira (2008), Rovers (2010) and Alexandrina (2011), ROA and ROE are used as dependent variables for this part of the research. It may also be worth mentioning that these two measures are among the most commonly used profitability measures in literature.

8.3.2. Independent Variables

8.3.2.1. Board of Directors' Gender Diversity

Following Campbell and Vera (2007), Rose (2007) and Pathan *et al.*, (2012), gender diversity in the Sudanese Islamic banks' boards of directors is measured by the percentage of females on the board of each of the examined Sudanese bank.

8.3.2.2. Gender Diversity of Departmental Managers

The most restrictive definition of gender diversity in literature includes only the percentage with a female CEO in the firm (see Navarro and Gallo, 2014 and Vieito, 2012). Other research extended gender diversity to include both top management (CEO) and vice-directors, because of the limited number of female CEOs (Smith *et al.*, 2006). As a large proportion of Sudanese Islamic Banks have limited number of females at CEO and vice-directors' levels, the researcher follows the same approach as Prete and Stefani (2013) Alexandrina (2011) Shrader *et al.*, (1997), Reinert *et al.*, (2015) to introduce a broader definition of top management levels that includes senior managers. Accordingly, gender diversity among senior managers is measured by the number of female' senior managers to total number departmental managers of each Sudanese bank. Such data is obtained from banks' annual reports. To identify the gender of the board members and

senior managers the researcher uses the following parameters. First, she uses a photograph of the person in the banks' annual report. If a photo is not presented, she bases her gender identification on the first name of the person.

8.3.2.3. Size of Board of Directors

Following Yermack (1996), Bhagat and Black (2002), Coles *et al.,* (2008) and Alexandrina (2011)'s previous studies in measuring board size, the researcher uses a number of directors within each board of directors as a proxy for board size.

8.3.2.4. Control variables

Pathan *et al.,* (2012) report that research on the impact of the structure of corporate governance on firm performance should control for endogeneity, at least in the board size variable. This is due to board size being influenced by firm characteristics, such as firm size. Accordingly, findings could be biased if these characteristics (sources of endogeneity) are not controlled for. Additionally, Ammari *et al*., (2014) considers 'dynamic endogeneity', which they define as "*the manner in which a firm's current performance affects both its future performance and governance*", as an important source of endogeneity that should be controlled for in research that focuses on the association between governance and performance relation studies, so as to attain unbiased evaluations. However, Pathan *et al.,* (2012) and Pathan and Skully (2010) argue that within the banking industry, dynamic endogeneity is less problematic because a bank's past performance does not normally impact its board of directors' size.

Whatever the debate on the importance of controlling for endogeneity factors, the researcher has benefitted from the findings of Chapter Seven, which prove that bank age, bank type, leverage, management efficiency, assets utilisation, specialisation and PLS modes of finance are the factors significantly influencing the performance of Sudanese Islamic banks, and uses these variables as control variables. As bank size has no impact on Sudanese Islamic Banks performance, it has been excluded from among control variables.

8.4. Summary

Within corporate governance context, this chapter focuses on the theoretical and empirical evidence of the impact of top management gender diversity on firms' and banks' financial performance. Its objective is twofold. Firstly, it seeks to review existing theoretical framework that attempts to identify the nature of the relationship between gender diversity in top management positions and the size of the board of directors on the financial performance. Secondly, to review the empirical literature on the link between gender diversity in top management positions, and the impact of the size of the board of directors on the financial performance.

Although most of the empirical evidence stand for a positive relationship between gender diversity and financial performance, and a negative association between board size and financial performance, general evidence from practical studies on the relationship between the two factors and firms' financial performance is still controversial.

In this regard, the researcher has built six empirical models –will be explained in the next chapter- in which she identifies, and compares, the relationship between gender diversity in top management positions, the board of directors' size and the financial performance of Sudanese Islamic Banks. This will offer a unique opportunity to bring into existence first time comparative and comprehensive evidence on the impact of the two factors on these banks. Using these seven models, the next chapter will report the estimated empirical results on the impact of each studied factor on the performance of Sudanese Islamic Banks.

Chapter Nine

The Empirical Results on Corporate Governance and Profitability

9.1. Introduction

This chapter provides an empirical evidence on the determinants of Sudanese Islamic banks' performance within the corporate governance context. It provides findings on the interrelationship between profitability, which is seen here as depending on a number of factors covering gender diversity, of the board of directors and at departmental managers' level, the board size and other key financial indicators, which are used as control variables. In addition, performance (i.e. profitability) is measured by ROA and ROE. By examining this relation, the researcher attempts to identify which of the three corporate governance factors is significant in explaining and predicting the performance of Sudanese Islamic banks.

This chapter is divided into 5 main sections. Section 2 describes the sample and presents the descriptive statistics. Section 3 introduces the estimated regression results and section 4 shows the findings of the robustness check conducted. Section 5 contains the summary and conclusion of the analysis and the findings.

9.2. Sample and descriptive Analyses

The sample for this study consists of 26 Sudanese Islamic banks, 9 of which are state banks and 17 private banks. Of the total number, 9 banks (34% of the total) have females on their board of directors and 11 banks (42% of the total) have females at the departmental manager level. Overall, only one bank has a female as a Chairman on the board of directors and as a CEO, which limits the possibility of applying any regression to assess their impact on the banks' performance. The number of women on the board of directors and departmental managers ranges from 1 to 8 with a majority of banks having 1 to 2 female board directors and 1 departmental managers. The fact that women are less likely to sit on the Board of Directors, at the Chairman or CEO positions, stands as an evidence of gender discrimination within top management positions in the Sudanese Banking industry, which proves the existence of a second glass ceiling within these banks.

Descriptive statistics, which provide an insight into the characteristics of the performance measures and indicators are shown in table 9.1.

Table 9.1 Descriptive Statistics of Dependent and Independent Variables for Sudanese Islamic Banks

Variable	Mean	St dev	Max	Min	No. of obs.
ROA	0.0266	0.0341	0.3141	-0.0896	191
ROE	0.1086	0.3177	0.5662	-3.8631	190
Age	6.9648	0.6465	8.0000	6.0000	199
Type	0.6793	0.4680	1.0000	0.0000	184
Specialised	4.0039	1.3073	5.0000	2.0000	252
Leverage1	0.5723	0.1906	0.9798	0.0000	191
Mgt. Effici1	0.6894	0.2932	2.7848	0.0983	191
Assets utilisn1	0.0817	0.0357	0.3619	0.0253	191
PLS	0.3637	0.3239	1.0000	0.0000	177
Brd size	10.699	1.4331	16.000	5.0000	153
Fbsize	0.0643	0.1639	0.8889	0.0000	153
Fecos	0.0788	0.1463	0.6667	0.0000	153

Table 9.1 indicates that ROE has a notably higher mean and standard deviation compared to ROA. A higher mean value of ROE means that the average value of ROE is remarkably higher than the average value of ROA. Higher values of standard deviation of ROE indicates that the data set of ROE are more dispersed from the mean than the ROA values. ROE also has a higher minimum and maximum values than ROA.

Table 9.1 also shows that the mean value of the number of females at top departmental management levels, which is (0.0788), is almost similar to the mean value of number of females on the board of directors (0.0643), indicating that, on average, there is no big difference in the percentage of female representation in both positions.

Additionally, the minimum value for the number of females in both board of directors and top departmental management levels is 0, indicating that some banks do not employ females at these positions. On the contrary, the maximum values for these two factors are 0.8889 for the board of directors and 0.6667 for departmental managers, confirming that

the maximum number of females within the two top management positions is lower at the board level rather than at the departmental level.

Turning to the size of the board of directors, the average number of directors within the boards is 10 to 11 members, as the mean value is 10.699, with a minimum of 5 directors and a maximum of 16.

With respect to the control variables, management efficiency has the higher mean value (of 0.6894) followed by leverage, with a mean value of 0.5723. Asset utilisation has the lowest mean value (of 0.0817) followed by PLS modes of finance which have a mean value of 0.3637.

9.3 Estimated Results Using the Pooled Estimation Method for the Entire Sample

This section of the study focuses on the impact of the set of profitability determinants on the performance of Sudanese Islamic banks, using the pooled estimation method. The researcher uses a basic equation of control variables to create seven models, which examines how the number of females within the board of directors, at departmental manager levels and the size of the board of directors impact the profitability of Sudanese Islamic banks. The three variables are substituted as follows to create the models:

Firstly, the size of the board of directors, the number of females on the board of directors and the number of females at departmental manager levels are used in turn in the first three models. Model four uses board size and the number of females on the board of directors. Model five uses board size and the number of females in departmental managers' levels. Model six uses the number of females on the board of directors and the number of females in the departmental managers' levels. Finally, all the three variables are used to create model seven.

After applying the regression steps, the researcher finds that the ordinary least square is the most suitable choice of analysis. This is due to the fact that the fixed effect model is rejected for the seven models at the higher likelihood ratio, which ranges from 0.2515 to 0.2640 for ROA and 0.3923 to 0.7748 for ROE.

Tables 9.2 and 9.3 show the impact of the independent variables on ROA and ROE as found from the regression results. According to table 9.1, R^2 for the first 7 models ranges between 0.7586 and 0.8661, indicating that if each variable in the model is increased by 1%, the increase on the ROA will range between 76% and 87%. On the contrary, the observed R^2 for ROE ranges between 0.4016 and 0.5083, meaning that if a similar 1% change occurred in all the independent variables, ROE will consequently change by 40% to 50%.

The higher R^2 value resulting from the application of the panel least squares method, when profitability is measured by ROA, shows that the variability in ROA of Sudanese Islamic banks is better explained by the set of independent variables than for ROE.

Table 9.2: Estimated Coefficient and their signs for the entire sample (ROA)

Variables	Basic Equ	Equation1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6	Equation 7
Constant	0.1037*** (0.0186)	0.1282*** (0.0244)	0.0738*** (0.0144)	0.0759*** (0.0134)	0.1274*** (0.0245)	0.0885*** (0.0183)	0.0744*** (0.0151)	0.1196*** (0.0257)
Age	-0.0071*** (0.0022)	-0.0087*** (0.0024)	-0.0037** (0.0015)	-0.0040*** (0.0015)	-0.0090*** (0.0025)	-0.0043*** (0.0015)	-0.0038** (0.0016)	-0.0077*** (0.0028)
Type	0.0373*** (0.0063)	0.0358*** (0.0067)	0.0180* (0.0108)	0.0182* (0.0105)	0.0358*** (0.0067)	0.0201* (0.0110)	0.0183* (0.0111)	0.0375*** (0.0069)
Specialised	-0.0142*** (0.0022)	-0.0144*** (0.0024)	-0.0072* (0.0040)	-0.0072* (0.0039)	-0.0143*** (0.0024)	-0.0080* (0.0041)	-0.0073* (0.0041)	-0.0154*** (0.0026)
Leverage1	-0.0440*** (0.0082)	-0.0494*** (0.0095)	-0.0340*** (0.0090)	-0.0346*** (0.0092)	-0.0490*** (0.0095)	-0.0368*** (0.0096)	-0.0344*** (0.0093)	-0.0462*** (0.0100)
Mgt Efficiency1	-0.0358*** (0.0056)	-0.0203** (0.0091)	-0.0495*** (0.0076)	-0.0491*** (0.0074)	-0.0203** (0.0091)	-0.0457*** (0.0085)	-0.0491*** (0.0078)	-0.0206** (0.0091)
Assets utilisation1	0.6224*** (0.0439)	0.6615*** (0.0506)	0.5780*** (0.0920)	0.5746*** (0.0923)	0.6627*** (0.0507)	0.5741*** (0.0935)	0.5808*** (0.0931)	0.6633*** (0.0507)
PLS	.0126*** (0.0043)	0.0108** (0.0053)	0.0070*** (0.0024)	0.0071*** (0.0023)	0.0116** (0.0054)	0.0069*** (0.0022)	0.0069*** (0.0025)	0.0133** (0.0056)
Brd Size		-0.0021* (0.0011)			-0.0019 (0.0011)	-0.0009 (0.0006)		-0.0020* (0.0011)
FbSize			-0.0025 (0.0044)		0.0082 (0.0108)		-0.0021 (0.0046)	0.0063 (0.0110)
FEcos				-0.0018 (0.0048)		-0.0005 (0.0050)	-0.0008 (0.0050)	0.0157 (0.0159)
R^2	0.7774	0.7595	0.8661	0.8646	0.7587	0.8640	0.8646	0.7586
Observations	168	168	168	168	168	168	168	168

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. *, **and *** indicate significance levels of 10, 5, 1 percent respectively

Table 9.3: Estimated Coefficient and their signs for the entire sample (ROE)

Variables	Basic equation	Equation1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6	Equation 7
Constant	1.2017*** (0.2516)	0.7395*** (0.1122)	0.6750*** (0.1310)	0.8779*** (0.0932)	0.7403*** (0.1127)	0.9169*** (0.1075)	0.8893*** (0.0941)	0.9181*** (0.1077)
Age	-0.0574* (0.0303)	-0.0573*** (0.0114)	-0.056*** (0.0158)	-0.0846*** (0.0115)	-0.0570*** (0.0116)	0.0850*** (0.0116)	-0.0874*** (0.0119)	-0.0872*** (0.0119)
Type	0.0281 (0.0860)	0.0544* (0.0310)	0.0558 (0.0380)	0.0189 (0.0290)	0.0544* (0.0311)	0.0184 (0.0291)	0.0177 (0.0290)	0.0175 (0.0291)
Specialised	-0.0138 (0.0308)	-0.0171 (0.0111)	-0.0174 (0.0143)	0.0054 (0.0109)	-0.0171 (0.0111)	0.0053 (0.0110)	0.0064 (0.0110)	0.0062 (0.0110)
Leverage1	0.1828* (0.1112)	-0.0163 (0.0438)	-0.0124 (0.0479)	-0.0791* (0.0415)	-0.0167 (0.0440)	-0.0809** (0.0417)	-0.0796* (0.0416)	-0.0809* (0.0417)
Mgt Efficiency1	-0.9823*** (0.0762)	-0.2108*** (0.0417)	-0.224*** (0.0483)	-0.2147*** (0.0362)	-0.2107*** (0.0419)	-0.2063*** (0.0380)	-0.2128*** (0.0363)	-0.2065*** (0.0381)
Assets utilisation1	-1.6664*** (0.5929)	0.4429* (0.2321)	0.4654** (0.2302)	0.4371** (0.2103)	0.4417* (0.2331)	0.4232** (0.2115)	0.4389** (0.2105)	0.4278** (0.2120)
PLS	0.1119* (0.058)	0.0204 (0.0243)	0.0267 (0.0247)	-0.0168 (0.0229)	0.0196 (0.0249)	-0.0203 (0.0234)	-0.0150 (0.0230)	-0.0180 (0.0237)
Brd Size		-0.0056 (0.0053)			-0.0058 (0.0054)	-0.0036 (0.0048)		-0.0028 (0.0049)
FbSize			0.0016 (0.0337)		-0.0085 (0.049790)		0.0404 (0.0448)	0.0351 (0.0460)
FEcos				-0.3521*** (0.0652)		-0.3483*** (0.0655)	-0.3615*** (0.0661)	-0.3573*** (0.0667)
R^2	0.5465		0.4016	0.5090	0.4021	0.5073	0.5083	0.5057
Observations	168	168	168	168	168	168	168	168

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. *, **and *** indicate significance levels of 1,5,10 percent respectively

To begin with, the regression results, as shown in Table 9.2, reveal that the board of directors' size has a negative and significant impact (at 10% significance level) on the first and the seventh model. This indicates that if a board size of a Sudanese bank is increased by 0.21% and 0.20% for the first and seventh models respectively, ROA will decrease by 1%.

This finding is supported by the argument advanced by Robb and Watson (2012), who report that larger boards lead to higher costs due to higher directors' salaries and remuneration when compared to smaller size boards. It is also in consonance with the arguments of Eisenberg *et al.*, (1998), Bøhren and Strøm (2007), Saravia (2010) and Robb and Watson (2012), who all report that large boards are more likely to suffer from issues related to coordination, communication, and decision-making, which leads to ineffective management and consequently poor performance. This finding is also consistent with the earlier finding of Yermack (1996) and the later findings of Pathan *et al.,* (2012) and Robb and Watson (2012). Additionally, it contradicts the finding of Reinert *et al.,* (2015) that prove a positive and significant impact of board size on the performance of banks in Luxembourg.

On the contrary, board size is proved to have a negative but insignificant impact on ROA of Sudanese Islamic banks. This can be seen in models four and five and ROE (all models). This could take to mean that any increase in the board size will have a negative but insubstantial influence on the financial performance of Sudanese Banks. This is in line with the findings of Bhagat and Black (2002), Alexandrina (2011) and Shorouq Tomar and Bino (2012), who all prove no impact of board size on the performance of their studied sample.

In the context of the Sudanese Banking industry, the inverse relationship between the size of the board of directors and profitability could possibly be related to the effect of corruption. According to the 2015 International Corruption Index, which measures the levels of public sector corruption, Sudan is one of the four most highly corrupt countries worldwide. Consequently, hiring or firing chief executives or members of the board may be related to special political relationships rather than being subject to qualifications and experience of the individuals who serve in these positions. Such attitude, therefore,

provides this level of management with unsuitable individuals who care more about their personal interest rather than that of the organisation. This, in turn, weakens the performance of the board of directors and consequently the financial performance of those banks.

Regarding the impact of gender diversity on performance, the presence of women at the departmental level is seen to have a negative and highly significant impact (1% level of significance) on ROE of Sudanese Banks. This indicates that if the number of females at the departmental managers' level increased by 1%, the ROE will decrease by around 35%. This finding agrees with the results of Bertand and Hallock (2001), who study the gender gap in top corporate jobs in the US and those of Metcalfe (2006), who studies the complexity of the interrelations between gender, organisation, and Islamic morals experiences of women professionals working in the Middle East. It also agrees with that of Prete and Stefani (2013), who study the impact of women representation on the Italian Banks' board.

This finding could be justified by the argument of Bertand and Hallock (2001) and Prete and Stefani (2013) who relate the negative and insignificant impact of women on the financial performance of their sample to the labour market discrimination and a lack of relatively long-term career commitment among women. Metcalfe (2006) report that due to strong and coherent gender roles in Islamic culture, women tend to have career development barriers. These constraints include business culture, which is characterised by stereotypical perceptions of female managers, lack of female role models, family commitments (such as children, grandparents and other relatives) and limited training opportunities. A notably negative association between departmental managers' gender and firm performance has been found in the earlier study of Shrader *et al.,* (1997). This finding, however, contradicts the findings of Smith *et al.,* (2006), who prove that the impact of females' at departmental managers' level is varied from positive to insignificant with the performance of Danish firms.

On the contrary, female representation is shown to have no significant impact at the departmental managers' level, when profitability is measured by ROA. This finding is in line with some of the earlier results by Shrader *et al.,* (1997) and later findings of Prete and Stefani (2013).

On the other hand, female representation on the board of directors is found to have no significant impact on both ROA and ROE of Sudanese Banks. This finding is supported by the argument of Rovers (2010), who report that encouraging women employment in the board is simply a symbolic value and has no impact on a firm's performance. The finding is also consistent with the findings of Dutta and Bose (2006), Rose (2007) and Prete and Stefani (2013), who prove no impact on the financial performance of their samples.

The insignificant impact of women on the board of directors on the profitability of Sudanese Islamic banks could be related to the critical mass theory, which is based on the number of females employed in a certain level of management. The number of females on the board of directors of Sudanese Islamic Banks is limited, which, according to Joecks *et al.,* (2013), create a skewed group that is linked with poor performance. Accordingly, the presence of females within the board of directors becomes more symbolic and their power less certain.

It may also be worth mentioning that the control variables had the same impact on ROA throughout the seven models as shown in table 9.2. However, findings on ROE, as can be seen from table 9.3, shows some changes concerning bank type, which remains positive but insignificant in models 2, 3, 5, 6, 7. Their basic equivalent is, in contrast, positively significant in models 1 and 4, when board size and number of females on the board are introduced. Furthermore, findings on leverage witnessed a dramatical change as it is shown to range between significantly positive, significantly negative and also insignificant throughout the seven models. Finally, the influence of PLS mode of finance changed from positively significant in the basic model to positively/negatively insignificant on the rest of the models. This could be possibly related to the impact of the risk-taking behaviour of females in top management positions.

9.4. Robustness Check

The researcher also applies four robustness checks in which she uses different measures of leverage, management efficiency and asset utilisation to test the validity of the regression findings. The following is an illustration of alternative measures used in the robustness check:

- With respect to leverage, she uses the ratio of long-term liability to total equity instead of total debt to total assets.
- Regarding management efficiency, she uses the ratio of total cost to total assets and the ratio of total cost to net income to substitute the ratio of total cost to total income.
- Finally, she uses investment to total deposit instead of operating income to total assets to measure assets utilisation.

Table 9.4 to 9.17 show the findings of robustness checks, which provide extra evidence that supports almost all the findings of the earlier regression results.

Table 9.4: Robustness on the Impact of board size on ROA of Sudanese Islamic Banks

Variables	Measures Alternatives	Original Equation	Equ 1	Equ 2	Equ 3	Equ 4
Constant		0.1282*** (0.0244)	0.1759*** (0.0540)	0.1648*** (0.0280)	0.1476*** (0.0220)	0.2947*** (0.0334)
Age		-0.0087*** (0.0024)	-0.0101*** (0.0034)	-0.0100*** (0.0025)	-0.0091*** (0.0020)	-0.0123*** (0.0033)
Type		0.0358*** (0.0067)	0.03840** (0.0172)	0.0377*** (0.0068)	0.0370*** (0.0053)	0.0384*** (0.0087)
Specialised		-0.0144*** (0.0024)	-0.01484** (0.0063)	-0.0139*** (0.0024)	-0.0143*** (0.0019)	-0.0136*** (0.0031)
Leverage2 and 1	Long term liability to total equity		-0.0576*** (0.0163)			
	Total debt to total assets	-0.0494*** (0.0095)		-0.0660*** (0.0101)	-0.0453*** (0.0079)	-0.1085*** (0.0155)
Mgt Efficiency2 ,3 and 1	Total cost to net income			-0.0001*** (5.57E-05)		
	Total cost to total assets				-0.6698*** (0.0695)	
	Total cost to: total income	-0.0203** (0.0091)	-0.0367*** (0.0113)			-0.0671*** (0.0106)
Assets utilisation2						-0.0048** (0.0021)
Assets utilisation1		0.6615*** (0.0506)	0.5425*** (0.1506)	0.6167*** (0.0478)	0.7257*** (0.0385)	
PLS		0.0108** (0.0053)	0.0091** (0.0042)	0.00251 (0.0051)	0.0103*** (0.0041)	0.0183*** (0.0069)
Brd size		-0.0021* (0.0011)	-0.0018 (0.0012)	-0.0031*** (0.0011)	-0.0014 (0.0009)	-0.0021 (0.0016)
Adjusted R^2		0.7509	0.7746	0.7509	0.8463	0.6007
Observations		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Findings on the size of the board of directors, as can be seen from the robustness check in Tables 9.4, 9.7, 9.8 and 9.10, confirm the previous finding on the impact of this indicator on the profitability of Sudanese Banks. The tables show that the impact remains either significantly negative or insignificantly negative.

Results from the robustness tables, as can be seen from Tables 9.5, 9.7, 9.9, 9.10, 9.12, 9.14, 9.16 and 9.17, also support the earlier finding that the existence of women on the board of directors has an insignificant impact on both ROA and ROE.

With regards the impact of gender diversity on departmental managers' level, the robustness check, as shown in Tables 9.6, 9.8, 9.9, 9.10, 9.13, 9.15, 9.16 and 9.17, all confirm previous findings that this factor either has a negative and significant or no impact on ROA and on ROE of Sudanese Banks.

Findings of the robustness test on the control variables, when profitability is measured by ROA, almost confirmed previous findings. The difference in the result is found in equation four, which could possibly be linked to the ambiguity of the asset utilisation measure that was used in the fourth equation. Management efficiency and PLS also witnessed some changes in table 9.5 as both are shown to have an insignificant impact when management efficiency is measured by total cost to net income.

Findings of the robustness check, when ROE is used as a performance measure, has revealed some changes in the fourth equation and on other control variables, such as the bank type, specialisation, leverage, assets utilisation and bank age. Nevertheless, the overall findings of the robustness check virtually confirmed previous findings.

Table 9.5: Robustness on the Impact of Females Representation in the Board of Directors on ROA of Sudanese Islamic Banks

Variables	Measures alternatives	Original Equation	Equ1	Equ2	Equ3	Equ4
Constant		0.0738*** (0.0144)	0.1558*** (0.0236)	0.0936*** (0.0205)	0.0267*** (0.0100)	0.1611*** (0.0309)
Age		-0.0037** (0.0015)	-0.0104*** (0.0025)	-0.0092*** (0.0025)	-0.0018** (0.0008)	-0.0065* (0.0039)
Type		0.0180* (0.0108)	0.0387*** (0.0065)	0.0345*** (0.0070)	0.0130* (0.0065)	0.0411*** (0.0103)
Specialised		-0.0072* (0.0040)	-0.0148*** (0.0023)	-0.0133*** (0.0025)	-0.0048*** (0.0024)	-0.0155*** (0.0037)
Leverage2 and 1	Long term liability to total equity		-0.0567*** (0.0094)			
	Total debt to total assets	-0.0340*** (0.0090)		-0.0604*** (0.0089)	-0.0145** (0.0035)	-0.0156 (0.0150)
Mgt Efficiency2, 3 and 1	Total cost to net income			-0.0001* (5.49E-05)		
	Total cost to total assets				-0.7472*** (0.0426)	
	Total cost to: total income	-0.049*** (0.0076)	-0.0400*** (0.0077)			-0.0864*** (0.0116)
Assets utilisation2						0.0019 (0.0020)
Assets utilisation1		0.5778*** (0.0920)	0.5537*** (0.0490)	0.7360*** (0.0444)	0.8557*** (0.0400)	
PLS		0.0069*** (0.0024)	0.0122** (0.0050)	0.0114** (0.0052)	0.0048*** (0.0015)	0.0328*** (0.0077)
FBsize		-0.0025 (0.0044)	0.0122 (0.0103)	0.0112 (0.0108)	0.0007 (0.0028)	0.0117 (0.016346)
Adjusted R^2		0.8661	0.7723	0.7482	0.9477	0.4402
No of Obs		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.6: Robustness on the Impact of Females Representation in the departmental managers on ROA of Sudanese Islamic Banks

Variables	Alternative measure	Original equation	Equ1	Equ2	Equ3	Equ4
Constant		0.0759*** (0.0134)	0.1523*** (0.0270)	0.0834*** (0.0225)	0.0766*** (0.0191)	0.0957*** (0.0225)
Age		-0.0040*** (0.0015)	-0.0096*** (0.0028)	-0.0076*** (0.0028)	-0.0052** (0.0024)	-0.0070*** (0.0028)
Type		0.0182* (0.0105)	0.0390*** (0.0067)	0.0358*** (0.0071)	0.0380*** (0.0060)	0.0379*** (0.0070)
Specialised		-0.0072* (0.0039)	-0.0150*** (0.0025)	-0.0143*** (0.0027)	-0.0155*** (0.0022)	-0.0155*** (0.0026)
Leverage2 and 1			-0.0563*** (0.0103)			
		-0.0346*** (0.0092)		-0.0586*** (0.0093)	-0.0227*** (0.0090)	-0.0451*** (0.0100)
Mgt Efficiency2, 3 and 1	Total cost to net income			-0.6433*** (0.0841)		
	Total cost to total assets				-0.0001** (5.47E-05)	
	Total cost to :total income	-0.0491*** (0.0074)	-0.0406*** (0.0077)			-0.0255*** (0.0087)
Assets utilisation2						0.6708*** (0.0508)
Assets utilisation1		0.5746*** (0.0923)	0.5535*** (0.0501)	0.7384 (0.0445)	0.7983*** (0.0381)	
PLS		0.0071*** (0.0023)	0.0115** (0.0054)	0.0122** (0.0055)	0.0150*** (0.0046)	0.0149*** (0.0055)
FEcos		-0.0018 (0.0048)	0.0021 (0.0158)	0.0140 (0.0160)	0.0135 (0.0135)	0.0150 (0.0157)
Adjusted R^2		0.8646	0.769983	0.7477	0.8192	0.7554
No of Obs.	142	142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.7: Robustness on the Impact of Board size and Females Representation in the board on ROA of Sudanese Islamic Banks

Variables	Alternative measure	Original Equation	Equ1	Equ2	Equ3	Equ4
Constant		0.1274*** (0.02453)	0.1750*** (0.0268)	0.1141*** (0.0197)	0.0998*** (0.0214)	0.2052*** (0.0368)
Age		-0.0090*** (0.0025)	-0.0105*** (0.0025)	-0.0071*** (0.0017)	-0.0070*** (0.0021)	-0.0074* (0.0039)
Type		0.0358*** (0.0067)	0.0384*** (0.0064)	0.0330*** (0.0100)	0.0363*** (0.0058)	0.0403*** (0.0102)
Specialised		-0.0143*** (0.0024)	-0.0147*** (0.0023)	-0.0126*** (0.0038)	-0.0145*** (0.0020)	-0.0154*** (0.0036)
Leverage2 and 1	Long term liability to total equity		-0.0574*** (0.0094)			
	Total debt to total assets	-0.0490*** (0.0095)		-0.0581*** (0.0079)	-0.0251*** (0.0087)	-0.0169 (0.0148)
Mgt Efficiency2 ,3 and 1	Total cost to :net income			-7.03E-05* (3.66E-05)		
	Total cost to total assets				-0.6240*** (0.0859)	
	Total cost to: total income	-0.0203** (0.0091)	-0.0366*** (0.0080)			-0.0771*** (0.0122)
Assets utilisation2						0.0028 (0.0020)
Assets utilisation1		0.6627*** (0.0507)	0.5446*** (0.0492)	0.6904*** (0.0904)	0.7825*** (0.0399)	
PLS		0.0116** (0.0054)	0.0100* (0.0052)	0.0021 (0.0038)	0.0134*** (0.0045)	0.0279*** (0.0079)
Brd size		-0.0019 (0.0011)	-0.0016 (0.0011)	-0.0028*** (0.0010)	-0.0010 (0.0010)	-0.0038** (0.0018)
FBsize		0.0082 (0.0108)	0.0093 (0.0104)	-0.0032 (0.00759)	0.0118 (0.0093)	0.0059 (0.016)
R^2		0.7587	0.7743	0.8064	0.8210	0.4549
Observations		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.8: Robustness on the Impact of Board size and Females Representation in Departmental managers on ROA of Sudanese Islamic Banks

Variables	Alternative measure	ROA	Equ1	Equ2	Equ3	Equ4
Constant		0.0885*** (0.0183)	0.1725*** (0.0294)	0.1252*** (0.0346)	0.0935*** (0.0225)	0.1980*** (0.0385)
Age		-0.0043*** (0.0015)	-0.0097*** (0.0028)	-0.0082*** (0.0023)	-0.0054** (0.0024)	-0.0060 (0.0042)
Type		0.0201* (0.0110)	0.0388*** (0.0066)	0.0364** (0.0160)	0.0378*** (0.0060)	0.0419*** (0.0104)
Specialised		-0.0080* (0.0041)	-0.0151*** (0.0025)	-0.0145** (0.0064)	-0.0156*** (0.0022)	-0.0164*** (0.0039)
Leverage2 and 1	Long term liability to total equity		-0.0565*** (0.0102)			
	Total debt to total assets	-0.0368*** (0.0096)		-0.0622*** (0.0101)	-0.0232*** (0.0090)	-0.0144 (0.0155)
Mgt Efficiency2, 3 and 1	Total cost to net income			-6.82E-05 (5.03E-05)		
	Total cost to total assets				-0.6166*** (0.0859)	
	Total cost to: total income	-0.0457*** (0.0085)	-0.0365*** (0.0080)			-0.0772*** (0.0122)
Assets utilisation2						0.0028 (0.0020)
Assets utilisation1		0.5741*** (0.0935)	0.5449*** (0.0500)	0.6985*** (0.1223)	0.7811*** (0.0399)	
PLS		0.0069*** (0.0022)	0.0097* (0.0055)	0.0077 (0.0063)	0.0139*** (0.0047)	0.0291*** (0.0082)
Brd Size		-0.0009 (0.0006)	-0.0019* (0.0011)	-0.0028*** (0.0010)	-0.0013 (0.0009)	-0.0040*** (0.0017)
FEcos		-0.0005 (0.0050)	0.0045 (0.0158)	0.0134 (0.0117)	0.0152 (0.0135)	0.0152 (0.0236)
R2		0.8640	0.7731	0.7701	0.8205	0.4561
Observations		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.9: Robustness on the Impact of Females Representation in the Board of directors and departmental managers on ROA of Sudanese Islamic Banks

Variables	Alternative measure	ROA	Equ1	Equ2	Equ3	Equ4
Constant		0.0744*** (0.0151)	0.1567*** (0.0272)	0.0864*** (0.0228)	0.0805*** (0.0192)	0.1130*** (0.0201)
Age		-0.0038** (0.0016)	-0.0105*** (0.0029)	-0.0082*** (0.0029)	-0.0060** (0.0024)	-0.0018 (0.0018)
Type		0.0183* (0.0111)	0.0386*** (0.0067)	0.0357*** (0.0072)	0.0377*** (0.0060)	0.0353*** (0.0130)
Specialised		-0.0073* (0.0041)	-0.0147*** (0.0025)	-0.0141*** (0.0027)	-0.0152*** (0.0022)	-0.0126*** (0.0047)
Leverage2 and 1	Long term liability to total equity		-0.0569*** (0.0103)			
	Total debt to total assets	-0.0344*** (0.0093)		-0.0584*** (0.0093)	-0.0225*** (0.0090)	0.0015 (0.0097)
Mgt Efficiency2,3 and 1	Total cost to net income			-0.0001** (5.50E-05)		
	Total cost to total assets				-0.6443*** (0.0838)	
	Total cost to: total income	-0.049*** (0.0078)	-0.0400*** (0.0077)			-0.0798*** (0.0109)
Assets utitilisation2						0.0019** (0.0009)
Assets utitilisation1		0.5808*** (0.0931)	0.5532*** (0.0500)	0.7377*** (0.0445)	0.7971*** (0.0380)	
PLS		0.0069*** (0.0025)	0.0120** (0.0054)	0.0127** (0.0055)	0.0156*** (0.0046)	0.0159*** (0.0046)
FBSize		-0.0021 (0.0046)	0.0123 (0.0105)	0.0099 (0.0110)	0.0126 (0.0092)	0.0051 (0.0066)
FEcos		-0.0008 (0.0050)	-0.0010 (0.0160)	0.0117 (0.0162)	0.0106 (0.0136)	0.0008 (0.0059)
R^2		0.8646	0.7706	0. 7473	0.8204	0.6252
Observations		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.10: the Impact of Board Size, Females Representation in the Board of directors and departmental managers on ROA of Sudanese Islamic Banks

Variables	Alternative measure	ROA	Equ1	Equ2	Equ3	Equ4
Constant		0.1196*** (0.0257)	0.1736*** (0.0294)	0.1166*** (0.0260)	0.0936*** (0.0225)	0.1983*** (0.0387)
Age		-0.0077*** (0.0028)	-0.0103*** (0.0029)	-0.0080*** (0.0028)	-0.0060** (0.0024)	-0.0062 (0.0044)
Type		0.0375*** (0.0069)	0.0386*** (0.0067)	0.0356*** (0.0070)	0.0376*** (0.0060)	0.0418*** (0.0105)
Specialised		-0.0154*** (0.0026)	-0.0148*** (0.0025)	-0.0144*** (0.0026)	-0.0153*** (0.0022)	-0.0163*** (0.0039)
Leverage2 and 1	Long term liability to total equity		-0.0569*** (0.0102)			
	total equity Total debt to total assets	-0.0462*** (0.0100)		-0.0567*** (0.0092)	-0.0230*** (0.0090)	-0.0143 (0.0155)
Mgt Efficiency2, 3 and 1	Total cost to net income			-9.65E-05* (5.44E-05)		
	Total cost to total assets				-0.6221*** (0.0860)	
	Total cost to :total income	-0.0206** (0.0091)	-0.0365*** (0.0080)			-0.0773*** (0.0122)
Assets utilisation2						0.0028 (0.0020)
Assets utilisation1		0.6633*** (0.0507)	0.5456*** (0.0080)	0.7103*** (0.0455)	0.7832*** (0.0399)	
PLS		0.0133** (0.0056)	0.0103* (0.050109 0.0055)	0.0106* (0.0055)	0.0146*** (0.0047)	0.0294*** (0.0083)
Brd Size		-0.0020* (0.0011)	-0.0017 (0.0011)	-0.0026** (0.0011)	-0.0011 (0.0010)	-0.0040** (0.0018)
FbSize		0.0063 (0.0110)	0.0091 (0.0107)	0.0047 (0.0111)	0.0102 (0.0095)	0.0042 (0.0166)
FEcos		0.0157 (0.01598)	0.0019 (0.0161)	0.01618 (0.0161)	0.0125 (0.0137)	0.0142 (0.0240)
R^2		0.7586	0.7726	0.7551	0.8207	0.4522
No of Obs		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.11: Robustness on the Impact of board size on ROE of Sudanese Islamic Banks

Variable	Alternative measure	Coefficient	Equ1	Equ2	Equ3	Equ4
Constant		0.7395*** (0.1122)	0.5643*** (0.1248)	0.7191*** (0.1199)	0.6381*** (0.1140)	0.7675*** (0.1134)
Age		-0.0573*** (0.0114)	-0.0443*** (0.0114)	-0.0627*** (0.0121)	-0.0539*** (0.0115)	-0.0533*** (0.0118)
Type		0.0544* (0.0310)	0.0611** (0.0302)	0.0417 (0.0334)	0.0556*** (0.0311)	0.0557* (0.0314)
Specialised		-0.0171 (0.0111)	-0.0207* (0.0108)	-0.0094 (0.0119)	-0.0156 (0.0111)	-0.0173 (0.0112)
Leverage2 and 1	Long term liability to		0.0988** (0.0437)			
	total equity Total debt to total assets	-0.0163 (0.0438)		-0.1192*** (0.0425)	0.0108 (0.0464)	-0.0094 (0.0456)
Mgt Efficiency2,3 and 1	Total cost to net income			-0.0006*** (0.0002)		
	Total cost to total assets				-2.2896*** (0.4567)	
	Total cost to :total income	-0.2108*** (0.0417)	-0.2231*** (0.0372)			-0.2443*** (0.0377)
Assets utilisation2						-0.0045 (0.0063)
Assets utilisation1		0.4429* (0.2321)	0.5368** (0.2285)	0.9464*** (0.2202)	1.2291*** (0.2120)	
PLS		0.0204 (0.0243)	0.0205 (0.0239)	-0.0078 (0.0251)	0.0045 (0.0237)	0.0312 (0.0239)
Brd size		-0.0056 (0.0053)	-0.0048 (0.0052)	-0.0123** (0.0054)	-0.0079 (0.0052)	-0.0056 (0.0055)
R^2		0.406524	0.4278	0.3247	0.405240	0.3926
Observations		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.12: Robustness on the Impact of Females Representation in the Board of Directors on ROE of Sudanese Islamic Banks

Variable	Alternative measure	Coefficient	Equ1	Equ2	Equ3	Equ4
Constant		0.6750*** (0.1310)	0.5082*** (0.1096)	0.5622*** (0.0999)	0.5378*** (0.0929)	0.7008*** (0.0943)
Age		-0.0563*** (0.0158)	-0.0436*** (0.0116)	-0.0611*** (0.0125)	-0.0531*** (0.0117)	-0.0511*** (0.0120)
Type		0.0558 (0.0380)	0.0620** (0.0302)	0.0438 (0.0341)	0.0577* (0.0313)	0.0568* (0.0315)
Specialised		-0.0174 (0.0143)	-0.0208* (0.0109)	-0.0093 (0.0122)	-0.0157 (0.0112)	-0.0177 (0.0113)
Leverage2 and 1	Long term liability to total equity		0.1008** (0.0438)			
	Total debt to total assets	-0.0124 (0.0479)		-0.1249*** (0.0434)	0.0169 (0.0467)	-0.0086 (0.0459)
Mgt Efficiency2 ,3 and 1	Total cost to net income			-0.0007*** (0.0002)		
	Total cost to total assets				-2.4462*** (0.4490)	
	Total cost to :total income	-0.2240*** (0.0483)	-0.2333*** (0.0357)			-0.2581*** (0.0354)
Assets utilisation2						-0.0061 (0.0062)
Assets utilisation1		0.4654** (0.2302)	0.5627** (0.2277)	1.0784*** (0.2164)	1.3289*** (0.2032)	
PLS		0.0267 (0.0247)	0.0264 (0.0235)	0.0027 (0.0254)	0.0132 (0.0237)	0.0372 (0.0235)
FBsize		0.0016 (0.0337)	0.0042 (0.0479)	0.0030 (0.0530)	0.0184 (0.0490)	-0.0062 (0.0498)
R^2		0.4016	0.4241	0.2988	0.3954	0.3879
No of Obs		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.13: Robustness on the Impact of Females Representation in the departmental managers on ROE of Sudanese Islamic Banks

Variables	Alternative measure	Coefficient	Equ1	Equ2	Equ3	Equ4
Constant		0.8779*** (0.0932)	0.7539*** (0.1167)	0.7760*** (0.1003)	0.7521*** (0.0915)	0.9048*** (0.0928)
Age		-0.0846*** (0.0115)	-0.0706*** (0.0123)	-0.0900*** (0.0126)	-0.0817*** (0.0116)	-0.0801*** (0.0118)
Type		0.0188 (0.0290)	0.0330 (0.0290)	0.0066 (0.0320)	0.0191 (0.0289)	0.0188 (0.0293)
Specialised		0.0053 (0.0109)	-0.0016 (0.0110)	0.0136 (0.0120)	0.0077 (0.0109)	0.0056 (0.0111)
Leverage2 and 1	Long term liability to total equity		0.0242 (0.0445)			
	Total debt to total assets	-0.0791* (0.0415)		-0.1887*** (0.0415)	-0.0501 (0.0435)	-0.0793** (0.0434)
Mgt Efficiency2,3 and 1	Total cost to net income			-0.0006*** (0.0002)		
	Total cost to total assets				-2.4295*** (0.4032)	
	Total cost to :total income	-0.2147*** (0.0362)	-0.2435*** (0.0334)			-0.2449*** (0.0321)
Assets utilisation2						-0.0068 (0.0055)
Assets utilisation1		0.4370** (0.2103)	0.3890* (0.2164)	1.0244*** (0.1983)	1.2700*** (0.1827)	
PLS		-0.0167 (0.0229)	-0.0130 (0.0234)	-0.0412* (0.0245)	-0.0323 (0.0224)	-0.0073 (0.0225)
FEcos		-0.3520*** (0.0652)	-0.3004*** (0.0685)	-0.3628*** (0.0713)	-0.3679*** (0.0649)	-0.3577*** (0.0659)
R^2		0.5090	0.4967	0.4129	0.5124	0.4988
No of Obs		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.14: Robustness on the Impact of Board size and Females Representation in the board on ROE of Sudanese Islamic Banks

Variables	Alternative measure	Coefficient	Equ1	Equ2	Equ3	Equ4
Constant		0.7403*** (0.1127)	0.5647*** (0.1254)	0.7208*** (0.1203)	0.6377 (0.1146)	0.7680*** (0.1138)
Age		-0.0570*** (0.0116)	-0.0441*** (0.0116)	-0.0619*** (0.0123)	-0.0541 (0.0117)	-0.0526*** (0.0121)
Type		0.0544* (0.0311)	0.0611** (0.0303)	0.0415 (0.0335)	0.0556 (0.0312)	0.0556* (0.0315)
Specialised		-0.0171 (0.0111)	-0.0207* (0.0109)	-0.0096 (0.0120)	-0.0156 (0.0111)	-0.0175 (0.0113)
Leverage2 and 1	Long term liability to total equity		0.0987** (0.0439)			
	Total debt to total assets	-0.0167 (0.0440)		-0.1202 (0.0428)	0.0110 (0.0467)	-0.0106 (0.0460)
Mgt Efficiency2, 3 and 1	Total cost to net income			-0.0006*** (0.0002)		
	Total cost to total assets				-2.2913*** (0.4591)	
	Total cost to :total income	-0.2107*** (0.0419)	-0.2231*** (0.0374)			-0.2439*** (0.0378)
Assets utilisation2						-0.0047 (0.0063)
Assets utilisation1		0.4417* (0.2331)	0.5358** (0.2296)	0.9427 (0.2212)	1.2298*** (0.2131)	
PLS		0.0196 (0.0249)	0.0201 (0.02446)	-0.0096 (0.0256)	0.0048 (0.0243)	0.0297 (0.0245)
Brd size		-0.0058 (0.0054)	-0.0049 (0.0053)	-0.0127* (0.0055)	-0.0078 (0.0053)	-0.00591 (0.0056)
FBsize		-0.0085 (0.0497)	-0.0043 (0.0488)	-0.0200 (0.0532)	0.0033 (0.0499)	-0.0150 (0.0505)
R^2		0.4021	0.4235	0.3204	0.4007	0.3884
No of Obs.		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.15: Robustness on the Impact of Board size and Females Representation in departmental managers on ROE of Sudanese Islamic Banks

Variables	Alternative measure	Coefficient	Equ1	Equ2	Equ3	Equ4
Constant		0.9169*** (0.1075)	0.7856*** (0.1281)	0.9326*** (0.1287)	0.8206*** (0.1082)	0.9402*** (0.1082)
Age		-0.0850*** (0.0116)	-0.0708*** (0.0124)	-0.0988*** (0.0138)	-0.0824*** (0.0116)	-0.0808*** (0.0119)
Type		0.0184 (0.0291)	0.0328 (0.0291)	0.0181 (0.0274)	0.0183 (0.0289)	0.0186 (0.0294)
Specialised		0.0053 (0.011002)	-0.0017 (0.0111)	0.0088 (0.0113)	0.0074 (0.0109)	0.0055 (0.0111)
Leverage2 and 1	Long term liability to total equity		0.0240 (0.0446)			
	Total debt to total assets	-0.0809** (0.041728)		-0.2063*** (0.0416)	-0.0524 (0.0435)	-0.0793* (0.0435)
Mgt Efficiency2, 3 and 1	Total cost to net income			-0.0005** (0.0002)		
	Total cost to total assets				-2.3209*** (0.4129)	
	Total cost to :total income	-0.2063*** (0.038063)	-0.2370*** (0.0352)			-0.2372*** (0.0343)
Assets utilisation2						-0.0060 (0.0057)
Assets utilisation1		0.4232** (0.211593)	0.3756* (0.2180)	0.7807*** (0.1912)	1.2003*** (0.1918)	
PLS		-0.0203 (0.023495)	-0.0159 (0.0240)	-0.0434* (0.0251)	-0.0366 (0.0227)	-0.0105 (0.0231)
Brd Size		-0.0036 (0.004875)	-0.0029 (0.0049)	-0.0050 (0.0069)	-0.0055 (0.0047)	-0.0032 (0.0050)
FEcos		-0.3483*** (0.065586)	-0.2967*** (0.0689)	-0.3585*** (0.0652)	-0.3609*** (0.0651)	-0.3539*** (0.0663)
R2		0.5073	0.4943	0.4648	0.5138	0.4965
No of Obs.		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.16: Robustness on the Impact of Females Representation in the Board of directors and departmental managers on ROE of Sudanese Islamic Banks

Variables	Alternative measure	Coefficient	Equ1	Equ2	Equ3	Equ4
Constant		0.8893*** (0.0941)	0.767*** (0.1179)	0.7894*** (0.1015)	0.7699*** (0.0923)	0.9391*** (0.0947)
Age		-0.0874*** (0.0119)	-0.0732*** (0.0127)	-0.0928*** (0.0130)	-0.0853*** (0.0119)	-0.0858*** (0.0123)
Type		0.0177 (0.0290)	0.0319 (0.0291)	0.0058 (0.0320)	0.0175 (0.0288)	0.0200 (0.0296)
Specialised		0.0064 (0.0110)	-0.0006 (0.0111)	0.0146 (0.0121)	0.0090 (0.0109)	0.0075 (0.0112)
Leverage2 and 1	Long term liability to total equity		0.0224 (0.0446)			
	Total debt to total assets	-0.0796* (0.0416)		-0.1879*** (0.0416)	-0.0492 (0.0434)	-0.1049** (0.0456)
Mgt Efficiency2, 3 and 1	Total cost to net income			-0.0006*** (0.0002)		
	Total cost to total assets				-2.4339*** (0.4021)	
	Total cost to :total income	-0.2128*** (0.0363)	-0.2418*** (0.0335)			-0.2243*** (0.0335)
Assets utilisation2						-0.0053 (0.0057)
Assets utilisation1		0.4389** (0.2105)	0.3880* (0.2166)	1.0216*** (0.1985)	1.2644*** (0.1823)	
PLS		-0.0150 (0.0230)	-0.0115 (0.0235)	-0.0391 (0.0247)	-0.0294 (0.0225)	-0.0174 (0.0233)
FBSize		0.0404 (0.0448)	0.0381 (0.0455)	0.0436 (0.0492)	0.0585 (0.0444)	0.0277 (0.0458)
FEcos		-0.3615*** (0.0661)	-0.3102*** (0.0696)	-0.3730*** (0.0723)	-0.3813*** (0.0655)	-0.3801*** (0.0671)
R^2		0.5083	0.4956	0.4120	0.5150	0.5000
No of Obs.		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 9.17: Robustness on the Impact of Board Size, Females Representation in the Board of directors and departmental managers on ROE of Sudanese Islamic Banks

Variables	Alternative measure	Coefficient	Equ1	Equ2	Equ3	Equ4
Constant		0.9181*** (0.1077)	0.7896*** (0.1285)	0.9308*** (0.1297)	0.8213*** (0.1081)	0.9427*** (0.1085)
Age		-0.0872*** (0.0119)	-0.0731*** (0.0128)	-0.1004*** (0.0149)	-0.0853*** (0.0119)	-0.0827*** (0.0123)
Type		0.0175 (0.0291)	0.031 (0.0292)	0.0171 (0.0273)	0.0171 (0.0289)	0.0180 (0.0295)
Specialised		0.0062 (0.0110)	-0.0008 (0.0112)	0.0095 (0.0113)	0.0086 (0.0109)	0.0061 (0.0112)
Leverage2 and 1	Long term liability to total equity		0.0225 (0.0448)			
	Total debt to total assets	-0.0809* (0.0417)		-0.2063*** (0.0415)	-0.0511 (0.0435)	-0.0784* (0.0437)
Mgt Efficiency2,3 and 1	Total cost to net income			-0.0005** (0.0002)		
	Total cost to total assets				-2.3473*** (0.4134)	
	Total cost to :total income	-0.2065*** (0.0381)	-0.2371*** (0.0352)			-0.2378*** (0.0344)
Assets utilisation2						-0.0057 (0.0057)
Assets utilisation1		0.4278** (0.2120)	0.3780* (0.2184)	0.7863*** (0.1931)	1.2101*** (0.1919)	
PLS		-0.0180 (0.0237)	-0.0138 (0.0242)	-0.0414 (0.0262)	-0.0332 (0.0229)	-0.0085 (0.0234)
Brd Size		-0.0028 (0.0049)	-0.0022 (0.0050)	-0.0041 (0.0078)	-0.0044 (0.0048)	-0.0026 (0.0051)
FbSize		0.0351 (0.0460)	0.0339 (0.0466)	0.0249 (0.0382)	0.0493 (0.04567)	0.0283 (0.0466)
FEcos		-0.3573*** (0.0667)	-0.3063*** (0.0703)	-0.3647*** (0.0668)	-0.3737*** (0.0661)	-0.3611*** (0.0675)
R^2		0.5057	0.4925	0.462091	0.5144	0.4941
No of Obs		142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

9.5. Summary

The purpose of this chapter is to provide empirical evidence on the influence of some corporate governance structure on performance. The corporate governance structure includes the size of the board of directors, the proportion of women on the board and departmental managers' positions. This chapter provides evidence of the impact of these structures on the profitability of Sudanese Islamic banks.

The results show that the pooling estimation method is the ideal method of estimation, except for rare cases where the Fixed Effect Model has been accepted and both Pooling and Random Effect Model are rejected. With regards the impact of the size of the board of directors on performance measures, the empirical result suggests that the impact is varied: the findings ranges from insignificant to negative and significant on ROA, whilst showing as having an insignificant relationship with ROE.

The existence of women on the board of directors is shown to be the only factor in the corporate governance structure that does not have a significant influence on ROA and ROE alike. On the other hand, the existence of women in departmental managers' positions is found to have an insignificant impact on ROA and a negative and significant impact on ROE of the understudy sample.

Finally, the control variables are shown to have the same impact on ROA and ROE, except for bank type, which varied from positive to insignificant. Leverage varied from negative and significant to positive and significant while the PLS mode of finance varied from positive and significant to having no impact on ROE of Sudanese Islamic banks.

Chapter Ten

Corporate Governance and Bank Risk

10.1. Introduction

The recent financial crisis provides evidence for the influence of bank risk-taking on financial stability and consequently on the worldwide economy. It highlights the importance of identifying the determinants of bank risk-taking (Skała and Weill, 2015). In this context, there is a plethora of literature examining these factors with a specific focus on risk-taking incentives of bank managers. The first strand of these research investigates how factors at the bank level or at the country level impact the risk-taking behaviour of bank managers (e.g., Boyd and Nicoló, 2005 and Berger *et al*., 2009 for competition; Berger and Young, 1997 for efficiency). The second strand of literature focuses on how risk-taking behaviour of top management can be affected by the compensation and incentives policies of the firm (see Fahlenbrach and Stulz, 2011). Studies with a focus on behavioural finance of corporate governance emphasise the impact of personal traits such as managers' gender, age and educational background on firms' financial outcomes. An example of these studies can be seen in Barber and Odean (2001), Campbell and Vera (2007), Rovers (2010), Pathan *et al.,* (2012) and Berger *et al.,* (2012).

In this study, the researcher examines the effect of gender and the number of highly educated managers, PhD holders, on bank risk. The aim is to find out whether the presence of females and PhD holders reduces/increases or has no impact on banks risk. Although it seems interesting to examine the impact of managers' age on banks' risk, such factor has been excluded due to data availability. This part of the study focuses on the impact of gender diversity and the number of highly educated management, with a focus on PhD holders, on risk taking of Sudanese Islamic Banks. By covering such issue the researcher provides a comprehensive picture of one of the most influential factors on banks' performance.

This chapter introduces theoretical framework and findings of previous studies on the impact of gender diversity and educational background on risk taking. It also provides an operational definition of these factors.

10.2. Theoretical framework

10.2.1. Gender and Risk-Taking Decisions

Various literature provides evidence of the existence of greater risk aversion among females when taking investment decisions (see Jianakopoulos and Bernasek, 1998 and Agnew *et al.*, 2003). Skała and Weill (2016) report that the hypothesis that females are more risk averse than males is built on the observation of differences in behaviour towards risk between males and females.

Barber and Odean (2001) explain that this higher risk aversion of females is because of their lower overconfidence when compared to male. Overconfidence is defined by Berger *et al.*, (2012) as very low-risk perception/assessment. Barber and Odean (2001) emphasise the idea that human beings are varied in their overconfidence about their abilities, knowledge and future predictions. In the same vein, Goel and Thakor (2008) report that overconfident managers invest less in information acquisition, which leads to poorer investment decisions. Barber and Odean (2001) also report that such overconfidence has been observed in areas such as finance, including investment bankers, and it is linked to greater trading and to lower expected value. Additionally, they report that rational investors agree on certain transaction only if they expect gains to go above transactions costs. However, overconfident investors misjudge the information accuracy and consequently their investment expected gains, which make them take a decision to invest in some transactions even if the expected net profits are negative.

Furthermore, Goel and Thakor (2008) report that such characteristic also affects the quality of the information supplied by the CEO to the board of directors, which also leads to poor corporate investment decisions. Barber and Odean (2001) report that women are less overconfident than men, therefore, women will perform better than men. On the contrary, Berger *et al.*, (2012) report that compared to men, women make poorer investment decisions because they face more difficulties in obtaining information about investment projects.

Further opinion on top managers risk taking behaviour is discussed by Malmendier *et al.*, (2011) and Skała and Weill (2016) who note the difference in the risk-taking behaviour to be because of the personal traits of the corporate decision maker rather than the gender

characteristics and circumstances. Malmendier *et al.,* (2011) report that a top manager who has experienced excessive depression tends to avoid risky decisions. Skała and Weill (2016) report that managers with military experience are prone to adopt more aggressive corporate strategies.

Risk-taking behaviour with regards gender differences and investment decision has been investigated by Barsky *et al.,* (1997), Jianakoplos and Bernasek (1998), Barber and Odean (2001) and Agnew *et al.,* (2003). A separate growing literature focuses on the effects of gender, in the context of corporate governance arrangements (see Berger *et al*., 2014 and Skała and Weill, 2015).

10.2.2. Education and Risk-Taking Decisions

The literature on the relationship between risk taking behaviour and educational background of the top management is limited, but can still be found. Some of the arguments provided by some literature indicate that a positive relationship exists between the two factors, whilst some support a negative association between the two factors. Evidence of no relation between the educational background of the senior management team and risk performance also exists. Studies that focus on the links between educational background and risk-taking behaviour can be seen in Grable (2000), Christiansen *et al.,* (2008), Ahern and Dittmar (2011) and Berger *et al.,* (2012).

Ahern and Dittmar (2011) argue that individual characteristics (such as education and professional experience) of board members, to a large extent, influences top management ability to perform their work. Additionally, Berger *et al.,* (2012) report that educational requirements for bank top managers have been suggested in the past as a way to improve corporate governance. Nevertheless, not too much is known about the impact of this factor on firm performance and whether the existence of such educated members may increase or reduce bank risk. In the same vein, Berger *et al.,* (2012) report that international efforts that aim to reduce banks' risk taking encourage the idea that banks should have managers with adequate banking experience to enable effective governance. However, they report that defining work experience is difficult as CEOs with higher education such as PhD degrees have fewer years of work experience than CEOs who does not have a PhD degree.

Studies that support the argument for the relationship between educational background and risk taking behaviour can be seen in Grable (2000), Bertrand and Schoar (2002) and Christiansen *et al.,* (2008).

Grable (2000) argue that higher educational attainment raises individual's tendency to take risks in their financial decisions. He links education to risk-taking behaviour in household money matters. Christiansen *et al.,* (2008) also suggest that higher level of education enhance risk-taking behaviour in terms of participation in stock market investments. This opinion is also supported by Bertrand and Schoar (2002) who argue that executives with MBAs make more risky policies and tend to be more aggressive.

On the contrary, Graham and Harvey (2001) provide evidence on the effect of the education of CEOs on firm financing policies. They suggest that when executives with MBAs estimate their cost of capital, they use sophisticated project assessment techniques more often than CEOs without such degrees. Therefore, they argue that using more of these techniques should consequently reduce firm risk. Further opinion is given by Berger *et al.,* (2014) who report that the use of sophisticated tools in decision making, with regards risk in banks, does not necessarily rely on education as these techniques already exist. However, they claim that education affects managers' understanding of these methods and helps them utilise these techniques for effective management decisions.

In contrast, Bucciol and Miniaci (2011) do not find a significant association between education and risk attitudes in a sample of U.S. households. Such weak association between the two factors is justified by Rose (2007) who report that the nature of the work of corporate governance does not require any specific educational background more than a university degree or equivalent skills which could be obtained from a substantial experience in business life.

10.3. Empirical evidence on the Impact of Gender Diversity and Education on Risk

Earlier, Barsky *et al*., (1997) use questionnaire responses to hypothetical situations to identify any behavioural differences in economic risk tolerance between males and females in the health sector. They find that females are significantly more risk averse than males.

Barber and Odean (2001) use accounting data for over 35,000 households from a large discount brokerage in the US for the period 1991 to 1997. They find that due to overconfidence reasons women are found to be significantly less risk averse in trading behaviour than men, which increase their returns more than the men counterpart. This finding is supported by Farrell and Hersch (2005) who prove a negative relationship between firm risk and the presence of females on the board of directors of a set of firms on the US Fortune 500 in 1990. This finding is also in line with those of Croson and Gneezy (2009) and Charness and Gneezy (2012), who suggest that women are more risk averse in their assembled data from 15 different countries.

Gulamhussen and Santa (2010) use data from 461 large banks in Norway, Sweden, Spain and France to assess the role of women in bank boardrooms. They document a positive relationship between the percentage of female representation in boardrooms and risk-taking, as measured by loan loss provisions and impaired loans ratio.

Further studies on gender differences are carried out by Agarwal and Wang (2009), Beck *et al.*, (2009) and Bellucci *et al.*, (2010), who all focus on risk-taking in the banking sector but limited to loan officers. They prove that default rates for loans assessed and originated by female loan officers are lower than those assessed and originated by their male counterpart. They use this finding to argue that women are less overconfident and, therefore, more risk averse than men.

Adams and Funk (2012) use a survey data to investigate whether females are more risk averse than men within the board of directors of Swedish companies. They find that female directors are slightly less risk averse than male directors. Atkinson *et al.,* (2003) compare the performance and investment behaviour of men and women as fixed-income mutual fund managers. They find differences in risk behaviour between men and women in their funds manage techniques, however, the variation was not significant. They

suggest that differences in this aspect may be related to investment knowledge and wealth constraints.

Skała and Weill (2016) investigate the influence of CEO gender diversity on bank risk using data from 347 Polish Cooperative Banks. They use capital adequacy, equity to assets ratios, loan loss provision and non-performing loans as risk measures. They find that banks headed by female CEOs are less risky when risk is measured by capital adequacy and equity to assets ratios, proving that the presence of a female bank manager improves the capital adequacy and equity to assets ratios without a simultaneous increase in their credit risk. Accordingly, they support the view that female CEOs contribute to reducing risk-taking behaviour. Their estimation results also suggest no significant impact of the existence of female CEO on banks' credit risk measures. Additionally, Skała and Weill (2016) prove that it is not the case that female CEOs are appointed in their positions in less risky and wealthier capital banks or that higher capital adequacy has been adopted because females have been appointed to their positions at problematic banks.

Further evidence on the impact of gender and education of executive teams on risk taking of German banks during 1994-2010 is provided by Berger *et al.,* (2012). They use risk-weighted assets to total assets and a Herfindahl-Hirschman as risk measures and find that higher risk taking is positively linked to female CEOs members, supporting the idea that the presence of women in a top management position is associated with risk, especially when the females is at a young age. Berger *et al.,* (2012) also suggest an inverse relationship between the proportion of executives with PhD and risk taking. They also argue that females' executives with PhD. have less expertise at the CEOs level than those who held no PhD counterparts.

Rose (2007) investigates the impact of gender and educational background and their influence on stimulating firm performance. He found that board members' education does not influence firm performance.

Prete and Stefani (2013) find a negative relationship between education and the number of women on Italian bank boards. They use this interesting finding as signals to tokenism in corporate governance choices. Their evidence also shows no impact of gender diversity on Italian Banks' risk performance. They find that expertise that is obtained by a person

during an extended membership is an important requirement to be chosen to participate in decision-making positions. Their evidence also proves that gaining only a B.A. degree reduces the chance of being in top positions as a senior manager. They also find that the middle management is in general characterised by a lower level of education compared to higher levels of management. Additionally, they suggest that managers who hold a B.A. reduce the probability of being isolated from the board.

In the Islamic banking context, the only study that focuses on gender and education is the one which was carried out by Al-Tamimi *et al.,* (2009) who examine whether there is a significant difference in customers' opinion on UAE Islamic banks based on gender and education. They confirm a significant difference in the image of UAE Islamic bank customers based on the two factors. Further to the researcher's knowledge, there is no other study that focuses on the impact of gender and education on Islamic banks' risk.

To conclude, Table 10.1 and 10.2 provide a brief summary of studies that focus on the impact of gender diversity and educational background on performance.

Table 10.1: Studies on the Impact of Gender Diversity on Risk Performance

Study	Nature of Impact
Barsky *et al*., (1997)	(-)
Barber and Odean (2001)	(-)
Farrell and Hersch (2005)	(-)
Croson and Gneezy (2009)	(-)
Charness and Gneezy (2012)	(-)
Prete and Stefani (2013)	No impact
Gulamhussen and Santa (2010)	(+)
Skała and Weill (2015)	Varied from negative to insignificant
Berger *et al.*, (2012)	(+)

Table 10.2: Studies on the Impact of Educational Background on Risk Performance

Study	Nature of Impact
Christiansen *et al.,* (2008)	(+)
Bucciol and Miniaci (2011)	No impact
Bertrand and Schoar (2002)	(-)
Berger *et al.,* (2012)	(-)

10.4. Variables Definition

This part of the research use gender and education of top management position as independent variables and banks' risk measure as dependent variables.

To measure the impact of top management educational background, the researcher follows Berger *et al.,* (2012), who use the fraction of board members with a PhD and the fraction of departmental managers and CEOs with PhDs.

To measure banks' risk, the researcher uses capital adequacy, equity to assets ratio and loan loss provision, which have all been defined in previous chapters.

The following are the justifications for using these measures for bank risk:

- Capital adequacy ratio closely reflects banks risk attitude as higher capital adequacy ratios reflect risk aversion policy, whilst lower ratios indicate CEOs risk tendency.
- Equity to Assets ratio is an alternative risk measure that can be used to provide complementary information to capital adequacy ratio. This ratio echoes whether capital is seized depending on risk weightings or as a simple nominal reserve buffer in the case of adverse conditions. It can also be seen as a comprehensive measure that takes into consideration major types of risk as well as reflecting current bank policy to retain more or less conservative reserves.

- As the main source of risk for Sudanese Islamic Banks is a credit risk, loan loss provision to total loan is used
- Loan loss provision to total assets is used for comparison reasons. It reflects the consequences of earlier policy conducted by executive managers.

It may worth mentioning that these ratios are most commonly used in the literature on bank risk indicators. Examples of such studies are Berger and DeYoung (1997), Kunt and Huizinga (1999), Berger (2009), Dietrich and Wanzenried (2009), Ali *et al.*, (2011) and Skała and Weill (2015).

It may also be worth mentioning that although non-performing loans and z-score are useful measures in this respect, the first one has not been used due to limited data availability whilst the second on is eliminated because the study period of time is too short to allow computing relevant measures.

Additionally, the researcher also uses previously mentioned definitions, of a number of females in the departmental managers' levels and the number of females on the board of directors, as measures of gender diversity in top management positions of Sudanese Islamic Banks. She also uses the number of males in the level of departmental managers to total managers at this level and the number of males on the board of director to the total number of directors to identify their impact and compare it with the females' impact.

The researcher also uses factors that have been defined and reviewed in the theoretical framework and literature review of previous chapters as control variables. These factors

include bank type, age, specialisation, size, operational efficiency and size of the board of directors. It also includes staff expenses and assets utilisation. Factors that are of relation to Islamic banking industry are profit and loss sharing modes of finance, non-profit and loss sharing mode of finance and Salam mode of finance.

10. 5. Summary

This chapter focuses on the theoretical and empirical evidence on the impact of gender and educational background of the top management team (especially the board of directors and departmental managers) on firms' and banks' risk-taking. Firstly, various literature document the existence of gender differences concerning risk taking. These differences are justified by the variation in the overconfidence of males and females; as males, in most of the literature, are proved to be more overconfident than females. Secondly some literature document differences in behaviour and personal traits of the corporate decision maker as a reason that increases or decreases the managers' susceptibility to take decisions that are characterised by risk. Empirical evidence on the impact of gender background on banks' risk is contradicted as it shows positive, negative or even no impact of gender on risk-taking decisions.

Additionally, this chapter provides the theoretical framework which aims to identify the nature of the relationship between the top managers' educational background and risk-taking decisions. In this vein, some opinions stand for no relationship between top managers' educational background, reporting that the nature of the work of these managers does not require any particular educational background more than a university degree or equivalent skills, which could be gained from a substantial experience in business life. In contrast, other opinions argue that individual characteristics of corporate governance, such as education, extend the top managers' ability in decisions making.

The next chapter analyzes the estimated empirical results on the impact of gender, educational background and other examined variables on the performance of Sudanese Islamic Banks.

Chapter Eleven

Analysis of the Influence of Gender and Education of Corporate Governance on Bank Risk

11.1 Introduction

This chapter provides empirical evidence on the determinants of risk, in the context of corporate governance, in the Sudanese Islamic Banking Industry. More specifically, it shows the impact of gender diversity in the top management team (this includes the board of director and departmental managers) on banks' risk. It also focuses on the impact of the level of education of the top management (such as PhD qualification) on banks' risk performance. Banks' risk behaviour is measured by total equity to total assets, capital to assets ratio, loan loss provision to total loan and loan loss provision to total assets.

This chapter is divided into five main sections. Section 11.2 provides descriptive statistics of the variables examined. Section 11.3 introduces the estimated regression results of the determinants of Sudanese Banks' risk performance. Section 11.4 discusses the findings of the robustness check on the relationship between banks' risk measures and determinants. Section 11.5 contains the chapter summary and conclusion.

11.2 Descriptive Analyses

Table 11.1 provides insights into the descriptive statistics of all the variables examined. It shows that total equity to total assets (CAPAD1) have the highest mean, standard deviation and max values than other risk measures. This is followed by capital to assets ratio (CAPAD2), which has the second largest scores. A higher standard deviation of these variables indicates that large proportions of the data sets are distributed away from their mean values. On the other end, CREDR3 has the lowest mean and standard deviation, followed by (CREDR1). A lower standard deviation of these variables indicates that large proportions of the data set are distributed closer to their mean values.

Turning to the descriptive statistics of the independent variables, the table shows that bedu has a remarkably high mean, standard deviation and max value, compared to Ecoedu: this indicates that the number of highly educated staff on the board of directors, in average, is

more than those in the departmental levels. Nevertheless, the standard deviations of these two factors are almost similar, indicating that there are no differences between the distributions of these factors around their mean values.

Table 11.1: Descriptive Statistics of Dependent and Independent Variables for Sudanese Islamic Banks

Variable Name	Mean	Std. Dev.	Max	Min	No of Obs.
CAPAD1	0.2447	0.2592	2.6724	0.0000	191
CAPAD2	0.1849	0.2448	2.5216	0.0000	191
CREDR1	0.0613	0.0733	0.4071	0.0000	170
REDR3	0.0214	0.0224	0.1538	0.0000	164
AGE	6.9648	0.6464	8.0000	6.0000	199
TYPE	0.6793	0.4680	1.0000	0.0000	184
Specialised	4.0039	1.3073	5.0000	2.0000	252
log(Totass)	20.489	0.9806	22.938	17.134	191
MGT1	0.6894	0.2932	2.7848	0.0982	191
OVER2	0.4271	0.1556	1.0738	0.0000	191
ASSUT1	0.0817	0.0357	0.3618	0.0252	191
PLS	0.3637	0.3239	1.0000	0.0000	177
SLM	0.0162	0.0396	0.3074	0.0000	177
MURBH	0.4661	0.2936	1.0000	0.0000	177
Bsize	10.699	1.4330	16.000	5.0000	153
FBSIZE	0.0643	0.1639	0.8888	0.0000	153
FECOS	0.0788	0.1463	0.6666	0.0000	153
Ecoedu	0.0962	0.1093	0.5000	0.0000	153
bedu	0.2159	0.1126	0.5454	0.0000	153

11.3 Main Estimation Results Using the Pooled Estimation Method

In this section of the study, the researcher investigates the impact of the set of risk determinants on the selected Sudanese Islamic banks' performance, using the pooled estimation method. The likelihood ratio test (the F-test) reveals that the fixed effect

variables are redundant in the equations (it was 0.150 for CAPAD1, 0.689 for CAPAD2, 0.86 for CREDR1 and 0.94 for CREDR3). Therefore, the fixed effect model is rejected and the ordinary panel least square regression is accordingly used.

However, in some of the robustness checks that will come later in this chapter, the fixed effect model has been accepted as the random model is rejected. Table 1.3 shows the regression results for the four dependent variables using the panel least squares method.

According to the table, the estimated value of the adjusted R-square (R^2) for CAPAD1 is 0.5158, CAPAD2 is 0.4487, CREDR1 is 0.1667 and CREDR3 is 0.1927. This finding shows that the variability of CAPAD1 and CAPAD2 are more affected by the linear correlation between the two measures and their independent variables than CREDR1 and CREDR3. According to this finding, if 1% change occurred in all independent variables, CAPAD1 and CAPAD2 will consequently change by 51.58% and 44.87% respectively. On the contrary, if 1% change occurred in all independent variables, CREDR1 and CREDR3 will consequently change by only 16.67% and 19.27% respectively.

Table 11.2 displays the main results, which shows the impact of gender and other explanatory variables on the four alternative measures of bank risk.

Table 11.2: Coefficient Estimates of the impact of the independent variables on Risk Measures (CAPAD1, CAPAD2, CREDR1 and REDR3) of Sudanese Islamic Banks

Variable Name	CAPAD1	CAPAD2	CREDR1	CREDR3
Constant	1.4279*** (0.4836)	1.5400*** (0.5020)	-0.2226 (0.2161)	-0.0776 (0.0591)
AGE	0.0840*** (0.0214)	0.0800*** (0.0222)	-0.0066 (0.0085)	0.0007 (0.0024)
TYPE	0.0857 (0.0633)	-0.0186 (0.0657)	0.0091 (0.0252)	-0.0089 (0.0068)
Specialised	-0.0266 (0.0224)	-0.0108 (0.0233)	-0.0048 (0.0089)	0.0027 (0.0024)
log(Totass)	-0.0769*** (0.0168)	-0.0959*** (0.01745)	0.0117* (0.0072)	0.0030 (0.0020)
MGT1	-0.2251*** (0.0733)	-0.1649** (0.0761)	0.0652** (0.0321)	0.0336 (0.0086)
OVER2	-0.0582 (0.0991)	-0.1746* (0.1028)	-0.0149 (0.0406)	-0.0022 (0.0113)
ASSUT1	-0.0696 (0.4641)	-0.3004 (0.4817)	0.0792 (0.2645)	0.1303 (0.0718)
PLS	-0.1321* (0.0706)	-0.0257 (0.0732)	0.0003 (0.0280)	-0.0173 (0.0086)
SLM	0.6528 (0.3979)	-0.0407 (0.4130)	-0.0449 (0.1543)	-0.0516 (0.0420)
MURBH	-0.2331*** (0.0746)	-0.0197 (0.07753)	0.0649** (0.0290)	-0.0112 (0.0084)
Bsize	0.0019 (0.0095)	0.0168* (0.0099)	0.0042 (0.0037)	0.0014 (0.0011)
FBSIZE	-0.1023 (0.0844)	-0.0827 (0.0876)	0.0066 (0.0327)	0.0138 (0.0088)
FECOS	0.5521*** (0.1223)	0.4615*** (0.1270)	0.0156 (0.0476)	-0.0083 (0.0135)
Ecoedu	0.5139*** (0.1414)	0.3183** (0.1468)	-0.0101 (0.0548)	-0.0109 (0.0164)
bedu	0.3524*** (0.1277)	0.4565*** (0.1326)	-0.1095** (0.0501)	-0.0461 (0.0150)
Adjusted R2	0.5158	0.4487	0.1667	0.1927
Obs	142	142	138	125

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Focusing on capital adequacy risk measures, the table shows that the impact of FECOS is significantly positive on both CAPAD1and CAPAD2. This means that the higher the

number of females employed in these positions, the higher the levels of capital in terms of both capital adequacy and equity to assets ratios. It may be worth mentioning that capital represents an essential buffer against the unexpected bank's loss distribution and it also plays an important role in offsetting losses resulting from non-performing loans, in the case that the loan loss provisions are not sufficient. It is, therefore, possible that females who hold management positions maintain higher capital ratios because they adopt a high credit risk policy. Therefore, it becomes of interest to re-estimate the analysis with default credit risk measures Credr1 and Credr3 (loan loss provision to total loan and loan loss provisions to total assets).

The estimation results, as can be seen from table 11.2, shows no significant relationship between FECOS and credit risk measures, implying that females, who are departmental managers, do not adopt high credit risk policy, within Sudanese banks context. This means that higher capital and equity ratio of these banks are not related to high credit risk policy.

Positive and significant relationship between female departmental managers and capital adequacy indicators in one hand, and insignificant relationship between female departmental managers and credit risk measures on the other hand, provide strong evidence that employing females as departmental managers in Sudanese Islamic Banks is linked to conservative risk policy, which means that females at these levels adopt policies that reduce banks liabilities.

This finding is consistent with the finding of Skala and Weill (2016), who prove significant positive association exists between female CEO and capital adequacy and equity to assets ratios, as well as the insignificant relationship between female CEO and credit risk, in 347 Polish Cooperative Banks. It is also contradicted by the findings of Berger *et al.*, (2014) who examine the relationship between gender diversity at CEO level of Deutsche Bundesbank during 1994 – 2010 and prove that female existence in the CEOs levels tends to increase risk-taking behaviour of German Banks.

To get a more comprehensive picture of the impact of gender diversity on the risk performance of Sudanese Islamic banks, the researcher examines the relationship between the presence of male departmental managers and risk in Sudanese banks, as measured by

total equity to total assets. Findings of the regression result in this aspect is shown in Table 11.3. The table also compares these findings with the earlier findings of female departmental managers.

Table 11.3: Comparison of the Impact of Females and Males Representation on CAPAD1 of Sudanese Islamic Banks

Variable Name	Females	Males
Constant	1.4279*** (0.4836)	2.4544*** (0.447347)
AGE	0.0840*** (0.0214)	0.0573*** (0.0214)
TYPE	0.0857 (0.0633)	-0.0040 (0.0554)
Specialised	-0.0266 (0.0224)	-0.0269 (0.0206)
log(Totass)	-0.0769*** (0.0168)	-0.0884*** (0.0153)
MGT1	-0.2251*** (0.0733)	-0.1926*** (0.0709)
OVER2	-0.0582 (0.0991)	-0.1121 (0.0925)
ASSUT1	-0.0696 (0.4641)	-0.0502 (0.4430)
PLS	-0.1321* (0.0706)	-0.0698* (0.0667)
SLM	0.6528 (0.3979)	0.5388 (0.3761)
MURBH	-0.2331*** (0.0746)	-0.1883*** (0.0704)
Bsize	0.0019 (0.0095)	-0.0081 (0.0091)
Gender of BSIZE	-0.1023 (0.0844)	-0.0924 (0.0811)
Gender of ECOS	0.5521*** (0.1223)	-0.4381*** (0.1158)
Adjusted R2	0.4487	0.5534
Obs	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

The table shows that the presence of male directors is negatively and significantly associated with capital adequacy. This indicates that contrary to the findings on female departmental managers, male departmental managers adopt high-risk policies, which is

supported by the argument of Skała and Weill (2015), who reports that females are more risk averse than males.

The overall results on the impact of gender diversity in departmental managers indicate that employing females at those positions in Sudanese Islamic Banks improves the capital adequacy and equity to assets ratios. As a result, employing females in these levels in Sudanese Islamic Banks is associated with more cautious capital adequacy ratios, which leads to more performance stability of these banks.

Findings on the impact of the presence of females on the board of directors on risk performance of Sudanese Islamic banks show no impact on both capital and equity ratios and credit risk measures. The regression result is shown in table 11.3. This result could be related to the critical mass theory, which is based on the number of females employed in a certain level of management. The number of females on the board of directors of Sudanese Islamic Banks is limited, which, according to Joecks *et al.,* (2013), create a skewed group that is associated with weakened performance. Accordingly, the presence of females within the board of directors becomes more symbolic and their influence less definite.

Overall, findings on the relationship between gender diversity and credit risk show that the presence of females in top management positions of Sudanese banks does not affect their default risk.

Turning to the impact of highly educated top managers (measured by the ratio of Ph.D. degree holders) on risk performance of Sudanese Islamic banks, the result, as seen from table 11.3, shows that the proportion of holders of this degree in departmental managers level has significant positive relationship with capital to assets ratio and equity to assets ratio. This indicates that increase in the number of highly educated managers in these positions will increase bank capital adequacy and equity to assets ratio. Furthermore, findings on their impact on credit risk showed no significant relation exists.

In contrast, findings on the impact of the presence of highly educated top managers on the board of directors' show that there is a significant positive impact on both capital to assets and equity to assets ratios. Furthermore, it reveals that there is a significantly

negative impact on credit risk when it is measured by loan loss provision to total loan, and insignificant negative impact when measured by loan loss provision to total assets.

This finding is in line with those of Berger *et al.,* (2014), who also prove adverse relationship between proportion of directors with PhD and risk-taking behaviour exists. It is, therefore, could be supported by his argument in which he claims that being a highly educated top manager enhances one's decision making and risk taking techniques.

The latter two findings could be interpreted to mean that highly educated members of departmental managers adopt conservative bank policy by increasing banks' capitalisation and reducing (or at least not increasing) credit risk. In addition, the conservative approach adopted by these managers could also be traced to the high level of inflation in Sudan. This is because the high level of inflation may influence the tendency of decision makers at this level to reduce the possibilities of delaying or losing all or part of the banks expected profits, investments (loans) or both. This interpretation may seem to be more realistic if seen under the nature of some of the Islamic banking modes of finance (such as Morabahah, Modarabah and Salam, which are all commodity contract based).

The findings also show no significant impact of highly educated board of directors on risk, when measured by loan loss provision to total assets. This finding is in line with Rose (2007), who justify the lack of relationship between firms' performance and the educational background of board members. He notes that this is because the nature of the work of corporate boards does not necessitate any educational background higher than a university degree or equivalent skills, which could be gained from a substantial experience in business life. Further comment on this aspect is given by Berger *et al.,* (2014), who report that the insignificant association between these two factors indicate that top managers who have higher education tend to act moderately. Therefore, it is likely that those with PhD are not as risk prone as non-PhD holders. Berger *et al.,* (2014) also remark that an increase in highly educated CEOs members has an important impact on the decision-making process of banks. They argue that an executive with a PhD degree considerably increases the amount and quality of information available to the top management positions, which will consequently make decisions taken by such managers

more moderate or even conservative. This is because these decisions will be built on appropriate information and evidence, which prevents intensive risk taking.

Finally, the size of the board of directors is proved to have a significant impact only on capital to assets ratio, when the ratio is limited to capital at its smallest value. Board size is shown to have no significant impact on all other three measures.

This finding may also be interpreted according to the report by Berger *et al.,* (2014), who argue that senior executive managers are to some extent independent of the board of directors. This independence lessens the CEOs' tendency to disclose information to the members of the board of directors, in order to avert interference into their management decisions. As a result, members of the board of directors become less informed and consequently cannot effectively perform their advisory role in recommending the type of project and the degree of risk the firm should pursue.

Turning to the impact of the control variables on banks' risk, bank size and management efficiency are inversely related to capital adequacy and equity to assets measures, and positively related to loan loss provision to total loan. It also proves to have no impact on loan loss provision to total assets. Furthermore, overhead expenses are found to have a significant negative impact only on capital to assets ratio. This impact is proved to be insignificant in all other three risk measures. Additionally, bank age is positively and significantly related to capital adequacy and equity to assets ratio, whilst proving to have no significant relationship with credit risk measures. Moreover, bank type, specialisation and assets utilisation are all found to have no significant impact on all four risk measures.

PLS mode of finance has a negative and significant impact on equity to assets ratio, and no impact on other risk measures. Meanwhile, non-PLS mode of finance is shown to have a negative and significant impact on equity to assets ratio. These findings indicate that these two modes of finance weaken the capitalisation of Sudanese Islamic Banks. Non-PLS mode of finance is also shown to have a positive and significant impact on loan loss provision to total loan. This indicates that it increases bank default risk. Finally, Salam mode of finance is found to have no impact on risk measures, which could be linked to the earlier findings that prove no relation between this mode of finance and profitability.

11.4 Robustness Check

In order to obtain a broader view and validate the robustness of the findings, the researcher re-estimates the main models by two different ways. Firstly, loans to assets ratio are included as an explanatory variable. Secondly, the researcher excludes the control variables from the first model. The following is a detailed explanation of the two types of robustness check.

First, it seems as if loans to assets can be considered as prime control variables in the first model because it takes into account the structure of assets. However, the reason behind excluding this indicator from among the control variables is that this ratio can be considered as an indicator for bank risk, which could lead to misleading results. Nevertheless, the researcher includes this ratio in the main model to assess its impact on the explained variables.

Table 11.4 displays the estimations with the loans to assets ratio.

Table 11.4: Robustness check: With Loans to Assets

Variable Name	CAPAD1	CAPAD2	CREDR1	REDR3
Constant	1.3724***	1.4494***	-0.2441	-0.0802
	(0.4807)	(0.4899)	(0.1915)	(0.0583)
AGE	0.0773***	0.0692***	0.0022	0.0020
	(0.0216)	(0.0220)	(0.0076)	(0.0025)
TYPE	0.0851	-0.0197	0.0101	-0.0087
	(0.0628)	(0.0640)	(0.0224)	(0.0067)
Specialised	-0.0293	-0.0151	-0.0019	0.0031
	(0.0223)	(0.0227)	(0.0079)	(0.0024)
log(Totass)	-0.0754***	-0.0934***	0.0125**	0.0029
	(0.0166)	(0.0170)	(0.0064)	(0.0020)
MGT1	-0.2143***	-0.1471**	0.0514*	0.0319***
	(0.0730)	(0.0744)	(0.0285)	(0.0086)
OVER2	-0.0759	-0.2036**	-0.0045	-0.0002
	(0.0988)	(0.1006)	(0.0360)	(0.0112)
ASSUT1	-0.1297	-0.3985	0.4206*	0.1693**
	(0.4616)	(0.4704)	(0.2415)	(0.0735)
PLS	-0.0948	0.0353	-0.0361	-0.0213***
	(0.0732)	(0.0745)	(0.0256)	(0.0087)
SLM	0.6875	0.0158	-0.0834	-0.0586
	(0.3952)	(0.4027)	(0.1369)	(0.0416)
MURBH	-0.1888***	0.0526	0.0121	-0.0184**
	(0.0782)	(0.0797)	(0.0272)	(0.0091)
Bsize	0.0014	0.0161*	0.0057*	0.0016
	(0.0094)	(0.0096)	(0.0033)	(0.0011)
FBSIZE	-0.1421	-0.1479*	0.0556*	0.0187**
	(0.0868)	(0.0884)	(0.0302)	(0.0091)
FECOS	0.5894***	0.5225***	-0.0235	-0.0107
	(0.1232)	(0.1433)	(0.0427)	(0.0134)
Ecoedu	0.4973***	0.2911**	0.0101	-0.0092
	(0.1406)	(0.1255)	(0.0487)	(0.0162)
bedu	0.3579***	0.4654***	-0.1043**	-0.0436***
	(0.1267)	(0.1291)	(0.0444)	(0.0149)
Loans / assets	0.1396*	0.2282***	-0.1733***	-0.0192**
	(0.0797)	(0.0812)	(0.0295)	(0.0096)
Adjusted R2	0.5236	0.477371	0.3454	0.2142
Obs	142	142	138	125

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. *, **and *** indicate significance levels of 10, 5,1 percent respectively

The results are consistent with the main results:

- Female departmental managers have a significant positive impact on capital adequacy and Equity to assets ratios and have no significant influence on credit risk measures.
- Education of departmental managers is significantly positive when the capital adequacy and Equity to assets are used as explained variables, and not significant for credit risk measures.
- Education of directors is significantly positive when the capital adequacy and Equity to assets are used as explained variables, and negatively significant for loan loss provision to total loan.

As can be seen from the table, differences obtained from including loan to assets ratio (MGT1, ASSUT1, PLS, MURBH, FBSIZE and bedu) are mostly found on credit risk measures, which are more likely to be interpreted by the by the nature of loan to assets ratio – which has a connection with other credit risk measures.

For the second type of robustness check, the researcher excludes management efficiency, overhead expenses, assets utilisation, the size of the board and education of departmental managers and members of the board. Tables 11.5, 11.6, 11.7 and 11.8 shows the findings when these tests were applied.

Tables 11.5 and 11.6 shows the result when the capital adequacy and equity to assets ratio are used as independent variables.

Table 11.5: Robustness check: Dependent Variable is CAPAD1

Variable Name		Original Equ	Equ1	Equ2	Equ3	Equ4	Equ5
Constant		1.4279*** (0.4836)	0.7448* (0.4434)	0.7606* (0.4165)	1.4940*** (0.2911)	1.8648*** (0.2775)	1.6673 (0.2565)
AGE		0.0840*** (0.0214)	0.0995*** (0.0215)	0.0993*** (0.0213)	0.0727*** (0.0163)	0.0827*** (0.0208)	0.0852 (0.0202)
TYPE		0.0857 (0.0633)	0.1289** (0.0638)	0.1277** (0.0626)	0.1092** (0.0570)	0.0563 (0.0505)	0.0497 (0.0507)
Specialised		-0.0266 (0.0224)	-0.0375* (0.0229)	-0.0374* (0.0228)	-0.0382* (0.0203)	-0.0471*** (0.0175)	-0.0419 (0.0181)
log(Totass)		-0.0769*** (0.0168)	- 0.0547*** (0.0156)	- 0.0550*** (0.0153)	-0.0757*** (0.0106)	-0.0881*** (0.0094)	-0.0903 (0.0099)
MGT1	MGT1	-0.2251*** (0.0733)			XXXX	XXX	XXX
	Excluding Mgt				XXXX	XXX	XXX
OVER2	OVER2	-0.0582 (0.0991)	0.0106 (0.0996)		XXXX	XXX	XXX
	Excluding OVER2				XXXX	XXX	XXX
ASSUT1	ASSUT1	-0.0696 (0.4641)	0.7546** (0.3909)	0.7460** (0.3811)	XXXX	XXX	XXX
	Excluding ASSUT1				XXXXX	XXX	XXX
PLS		-0.1321* (0.0706)	-0.1859*** (0.0706)	-0.1865*** (0.0701)	-0.0427 (0.0764)	-0.0191 (0.0744)	-0.0129 (0.0780)
SLM		0.6528	0.4980	0.4964	0.2571	-0.1138	3.25E-05

		(0.3979)	(0.4076)	(0.4057)	(0.4713)	(0.4544)	(0.4841)
MURBH		-0.2331*** (0.0746)	-0.2510*** (0.0769)	-0.2518*** (0.0762)	-0.1150 (0.0815)	-0.1202 (0.0782)	-0.1439 (0.0822)
Bsize		0.0019 (0.0095)	-0.0068 (0.0094)	-0.0069 (0.0093)	-0.0200*** (0.0084)	-0.0199*** (0.0084)	XXXX
	Excluding Bsize						XXXX
FBSIZE		-0.1023 (0.0844)	-0.0981 (0.0872)	-0.0985*** (0.0868)	-0.0689 (0.0553)	-0.0532 (0.0586)	-0.0262 (0.0566)
FECOS		0.5521*** (0.1223)	0.5712*** (0.1262)	0.5723*** (0.1253)	0.5942*** (0.0876)	0.5624*** (0.0951)	0.5370 (0.0977)
Ecoea		0.5139*** (0.1414)	0.5354*** (0.1459)	0.5321*** (0.1420)	0.4585*** (0.1675)		
	Excluding ECOs educated						
bedu		0.3524*** (0.1277)	0.3643*** (0.1318)	0.3619 (0.1295)	0.3251*** (0.0983)		
	Excluding board educated						
Adjusted R2		0.5158	0.4837	0.4877	0.5177	0.4591	
Obs		142	142	142	142	142	

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. *, **and *** indicate significance levels of 1,5,10 percent respectively

Table 11.6: Robustness check Dependent Variable CAPAD2

Variable Name		Original	Equ1	Equ2	Equ3	Equ4	Equ5
Constant		1.5400*** (0.5020)	1.0397** (0.4522)	0.8557** (0.4272)	1.0426*** (0.3870)	1.3494*** (0.3971)	1.4138*** (0.3811)
AGE		0.0800*** (0.0222)	0.0914*** (0.0219)	0.0939*** (0.0218)	0.0916*** (0.0217)	0.1035*** (0.0225)	0.1034*** (0.0224)
TYPE		-0.0186 (0.0657)	0.0129 (0.0650)	0.0266 (0.0642)	0.0188 (0.0637)	-0.0728 (0.0620)	-0.0728 (0.0619)
Specialised		-0.0108 (0.0233)	-0.0187 (0.0233)	-0.0198 (0.0234)	-0.0157 (0.0231)	-0.0103 (0.0234)	-0.0111 (0.0233)
log(Totass)		-0.0959*** (0.01745)	-0.0796*** (0.0159)	-0.0762*** (0.0157)	-0.0815*** (0.0149)	-0.0880*** (0.0147)	-0.0879*** (0.0147)
MGT1	MGT1	-0.1649** (0.0761)	xxxxx	Xxxxx	XXXX	XXX	XXX
	Excluding Mgt		Xxxxx	Xxxxx	XXXX	XXX	XXX
OVER2	OVER2	-0.1746* (0.1028)	-0.1242 (0.1016)	Xxxxx	XXXX	XXX	XXX
	Excluding OVER2			Xxxxx	XXXX	XXX	XXX
ASSUT1	ASSUT1	-0.3004 (0.4817)	0.3033 (0.3986)	0.4034 (0.3909)	XXXX	XXX	XXX
	Excluding ASSUT1				Xxxx	XXX	XXX
PLS		-0.0257 (0.0732)	-0.0651 (0.0720)	-0.0587 (0.0719)	-0.0625 (0.0718)	-0.0956 (0.0733)	-0.1001 (0.0728)
SLM		-0.0407	-0.1541	-0.1352	-0.1695	-0.4861	-0.5352

		(0.4130)	(0.4156)	(0.4161)	(0.4149)	(0.4308)	(0.4218)
MURBH		-0.0197 (0.07753)	-0.0328 (0.0784)	-0.0240 (0.0782)	-0.0328 (0.0777)	-0.0861 (0.0793)	-0.0827 (0.0789)
Bsize		0.0168* (0.0099)	0.0104 (0.0096)	0.0114 (0.0095)	0.0085 (0.0091)	0.0056 (0.0094)	XXXX
	Excluding Bsize			Xxxxx	Xxxxxx	Xxxx	XXXX
FBSIZE		-0.0827 (0.0876)	-0.0797 (0.0889)	-0.0750 (0.0890)	-0.0754 (0.0890)	-0.0673 (0.0941)	-0.0778 (0.0922)
FECOS		0.4615*** (0.1270)	0.4755*** (0.1286)	0.4632*** (0.1285)	0.4547*** (0.1283)	0.3643*** (0.1329)	0.3722*** (0.1319)
Ecoea		0.3183** (0.1468)	0.3340** (0.1488)	0.3727*** (0.1456)	0.3815*** (0.1454)		
	Excluding ECOs education					Xxxx	Xxxxx
bedu		0.4565*** (0.1326)	0.4652*** (0.1344)	0.4926*** (0.1328)	0.4771*** (0.1320)	Xxxx	Xxxxxx
	Excluding board education						Xxxxx
Adjusted R2		0.4487	0.432739	0.4305	0.4302	0.4302	0.3662
Obs		142	142	142	142	142	142

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 10, 5,1 percent respectively

The results are consistent with the findings from the main model:

- Female departmental managers have a significantly positive effect when the capital adequacy and Equity to assets are used as explained variables.

- The existence of females in the board of directors has no significant impact on capital adequacy and equity to assets ratio.

- Education of departmental managers is significantly positive when the capital adequacy and equity to assets are used as explained variables.

- Education of board directors is significantly positive when the capital adequacy and equity to assets ratios are used as explained variables.

Tables 11.7 and 11.8 shows the findings when credit risk measures are used as dependent variables.

The results are consistent with the findings from the main models:

- The existence of females in the departmental manager's levels and board of directors has no significant impact on the two measures of credit risk.

- Education of departmental managers and directors of the board has an insignificant impact on the two measures of credit risk.

- Education of board directors is either insignificant or significantly negative when loan loss provision to total loan and loan loss provision to total assets are used as explained variables.

Table 11.7: Robustness Check Dependent Variable Crd Risk1

Variable Name	Variable Measure	Original	Equ1	Equ2	Equ3	Equ4	Equ5
Constant		-0.2226 (0.2161)	0.0237 (0.1811)	-0.0355 (0.1725)	-0.1304 (0.1444)	-0.1488 (0.1415)	-0.1488 (0.1415)
AGE		-0.0066 (0.0085)	-0.0118 (0.0082)	-0.0109 (0.0081)	-0.0099 (0.0081)	-0.0100 (0.0079)	-0.0100 (0.0079)
TYPE		0.0091 (0.0252)	-0.0062 (0.0244)	-0.0014 (0.0240)	0.0017 (0.0238)	0.0202 (0.0221)	0.0202 (0.0221)
Specialised		-0.0048 (0.0089)	-0.0005 (0.0088)	-0.0010 (0.0087)	-0.0025 (0.0086)	-0.0060 (0.0083)	-0.0060 (0.0083)
log(Totass)		0.0117* (0.0072)	0.0040 (0.0062)	0.0051 (0.0061)	0.0077 (0.0055)	0.0064 (0.0052)	0.0064 (0.0052)
MGT1	MGT1	0.0652** (0.0321)	Xxxxx	Xxxxx	XXXX	XXX	XXX
	Excluding Mgt		Xxxxx	Xxxxx	XXXX	XXX	XXX
OVER2	OVER2	-0.0149 (0.0406)	-0.0415 (0.0389)	Xxxxx	XXXX	XXX	XXX
	Excluding OVER2		Xxxxx	Xxxxx	XXXX	XXX	XXX
ASSUT1	ASSUT1	0.0792 (0.2645)	-0.2392 (0.2157)	-0.2161 (0.2147)	XXXX	XXX	XXX
	Excluding ASSUT1		Xxxxx	Xxxxx	Xxxx	XXX	XXX
PLS		0.0003 (0.0280)	0.0162 (0.0273)	0.0174 (0.0273)	0.0215 (0.0269)	0.0342 (0.0262)	0.0342 (0.0262)
SLM		-0.0449 (0.1543)	-0.0108 (0.1553)	-0.0033 (0.1552)	0.0103 (0.1546)	0.0643 (0.1532)	0.0643 (0.1532)
MURBH		0.0649** (0.0290)	0.0674** (0.0293)	0.0705*** (0.0292)	0.0744*** (0.0289)	0.0891*** (0.0282)	0.0891*** (0.0282)
Bsize		0.0042 (0.0037)	0.0060* (0.0036)	0.0064* (0.0036)	0.0077** (0.0034)	0.0089*** (0.0033)	0.0089*** (0.0033)
	Excluding Bsize		Xxxxx	Xxxxx	Xxxxx	Xxxxx	XXXX
FBSIZE		0.0066 (0.0327)	0.0051 (0.0331)	0.0066 (0.0331)	0.0068 (0.0331)	0.0047 (0.0334)	0.0047 (0.0334)
FECOS		0.0156 (0.0476)	0.0092 (0.0481)	0.0049 (0.0479)	0.0095 (0.0477)	0.0289 (0.0471)	0.0289 (0.0471)
Ecoea		-0.0101 (0.0548)	-0.0152 (0.0554)	-0.0031 (0.0543)	-0.0052 (0.0543)		Xxxxx
	Excluding ECOs education		Xxxxx	Xxxxx	Xxxxx	Xxxx	Xxxxx
bedu		-0.1095** (0.0501)	-0.1166** (0.0506)	-0.1083** (0.0500)	-0.0989** (0.0491)	Xxxx	Xxxxxx

	Excluding board education	Xxxxx	Xxxxx	Xxxxx	Xxxxx	Xxxxx	Xxx
Adjusted R^2		0.1667	0.1456	0.1446	0.1445	0.1304	0.1304
Obs		138	138	138	138	138	138

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

Table 11.8: Robustness Check: Dependent Variable Crd Risk3

Variable Name		Original	Equ1	Equ2	Equ3	Equ4	Equ5
Constant		-0.0776 (0.0591)	0.0489 (0.0522)	0.0258 (0.0498)	0.0144 (0.0416)	0.0025 (0.0413)	0.0379 (0.0416)
AGE		0.0007 (0.0024)	-0.0019 (0.0025)	-0.0015 (0.0025)	-0.0014 (0.0024)	-0.0013 (0.0024)	-0.0021 (0.0025)
TYPE		-0.0089 (0.0068)	-0.0168*** (0.0069)	-0.0149** (0.0068)	-0.0146** (0.0067)	-0.0072 (0.0064)	-0.0075 (0.0067)
Specialised		0.0027 (0.0024)	0.0050** (0.0025)	0.0049** (0.0025)	0.0047** (0.0024)	0.0039 (0.0024)	0.0034 (0.0025)
log(Totass)		0.0030 (0.0020)	-0.0009 (0.0018)	-0.0005 (0.0018)	-0.0002 (0.0017)	-0.0008 (0.0016)	-0.0005 (0.0016)
MGT1	MGT1	0.0336 (0.0086)	Xxxxx	Xxxxx	XXXX	XXX	XXX
	Excluding Mgt		Xxxxx	Xxxxx	XXXX	XXX	XXX
OVER2	OVER2	-0.0022 (0.0113)	-0.0160 (0.0114)	Xxxxx	XXXX	XXX	XXX
	Excluding OVER2			Xxxxx	XXXX	XXX	XXX
ASSUT1	ASSUT1	0.1303 (0.0718)	-0.0340 (0.0615)	-0.0257 (0.0615)	XXXX	XXX	XXX
	Excluding ASSUT1		Xxxxxxx	Xxxxxxx	Xxxx	XXX	XXX
PLS		-0.0173 (0.0086)	-0.0098 (0.0089)	-0.0086 (0.0089)	-0.0079 (0.0087)	-0.0013 (0.0086)	-0.0013 (0.0089)
SLM		-0.0516 (0.0420)	-0.0339 (0.0443)	-0.0313 (0.0445)	-0.0295 (0.0441)	-0.0084 (0.0446)	-0.0307 (0.0459)
MURBH		-0.0112 (0.0084)	-0.0103 (0.0090)	-0.0091 (0.0090)	-0.0086 (0.0088)	-0.0043 (0.0090)	-0.0005 (0.0093)
Bsize		0.0014 (0.0011)	0.0024** (0.0011)	0.0025** (0.0011)	0.0027** (0.0010)	0.0034*** (0.0010)	XXXX
	Excluding Bsize		xxx	Xxx	Xxx	Xxx	XXXX
FBSIZE		0.0138 (0.0088)	0.0129 (0.0094)	0.0135 (0.0094)	0.0135 (0.0094)	0.0126 (0.0096)	0.0076 (0.0099)
FECOS		-0.0083 (0.0135)	-0.0115 (0.0143)	-0.0127 (0.0143)	-0.0122 (0.0142)	-0.0027 (0.0142)	-0.0008 (0.0148)
Ecoea		-0.0109 (0.0164)	-0.0131 (0.0174)	-0.0074 (0.0170)	-0.0080 (0.0168)	Xxxx	xxxx
	Excluding ECOs education	xxx	xxxx	Xxxx	Xxxx	Xxxx	Xxxxx
bedu		-0.0461 (0.0150)	-0.0498*** (0.0159)	-0.0455*** (0.0157)	-0.0441** (0.0153)	Xxxx	Xxxxxx

	Excluding board education	xxxxxxx	xxxxxxx	xxxxxxx	Xxxxxxx	xxxxxxx	Xxxxx
Adjusted R2		0.1927	0.0901	0.0820	0.0888	0.0377	-0.0439
Obs		125	125	125	125	125	125

* Numbers without brackets are the coefficients and numbers in brackets are the standard deviations. ***, **and * indicate significance levels of 1,5,10 percent respectively

11.5. Summary

This chapter shows the empirical findings on the relationship between gender diversity at the departmental managers' and board of directors' levels and risk-taking behaviour of Sudanese Islamic Banks. It also examines the impact of highly educated staff at these two levels. To achieve this goal, capital adequacy, equity to assets ratio and two credit risk measures are used as dependent variables.

The overall evidence shows that the presence of a female departmental manager is associated with lower bank risk in two terms. Firstly, the presence of a female departmental manager is correlated with higher capital adequacy and equity to assets ratios, which enhance the banks' ability to be protected against unexpected loss. It also makes the banks more able to offset losses resulting from non-performing loans in the case that loan loss provisions are not adequate enough to meet these type of losses. When focusing on this result, it may come to mind that females who hold these positions encourage higher capital ratios policies because they implement a high credit risk policy. However, examining the impact of female departmental managers on the two measures of credit risk shows insignificant association between credit risk and females at these levels of management, which means that higher capital adequacy and equity to assets ratio does not stem from lower asset quality and it is, therefore, more likely to be related to higher risk aversion by the departmental manager.

Findings on the impact of female existence at the board of directors' level prove an insignificant relationship exists between this factor and all risk measures in most of the cases.

Findings on the impact of better-educated people prove positive association exists between the proportions of PhD holders in top management positions in both departmental managers' levels and board of directors in one hand and capital to assets ratio and equity to assets ratio on the other hand. This means that the presence of highly educated top managers enhances the managers' decision-making capabilities and risk taking techniques. Furthermore, the findings prove that highly educated

top managers on the board of directors have a significantly negative impact on credit risk when it is measured by loan loss provision to total loan. It also shows no significant relationship between the highly educated board of directors' member and risk when measured by loan loss provision to total assets.

In a nutshell, the main conclusion of this chapter is that the presence of female departmental managers, and females on the board of directors of Sudanese Islamic Banking Industry supports the view that women appointed to these positions are often risk averse and therefore tend to contribute to reducing the banks' risk exposure.

Chapter Twelve

Conclusions

12. 1. Introduction

This chapter contains the conclusions of the research. To begin with, the reader needs to be aware of the following:

1. This study is an explanatory study that is confined to one country, Sudan.

2. The study covered the period from 2005-2013 only. In essence, the findings of this study only apply to the period of the study.

3. Out of the total of 36 Sudanese banks, the sample of study consists of 27 Sudanese Islamic Banks, 10 state banks and 17 private banks. 9 banks are excluded either because they are foreign banks which do not allow granting their financial statements (whether through their websites or from their headquarters) or because they are recently established and therefore they do not have financial statements for the study period.

12.2. Conclusions

The first generation of Islamic banks in Sudan was established in the 1970s. However, since that time, no in-depth study has been conducted to investigate the performance determinants of these banks.

Bearing in mind that sustainable profitability and healthy performance are vital in maintaining the stability of the banking system (Vong and chan 2009; Flamini *et al*., 2009; Javaid *et al*., 2011), this study aims to provide a practical overview of the main performance determinants of Sudanese Islamic Banks.

This study provides an empirical evidence on the performance of Sudanese Islamic banks by building three models, each of which supplies practical evidence on the performance of these banks. Together, these models provide a comprehensive picture of the performance of selected Sudanese banks. Furthermore, given that Sudan has a vast potential for growth in the productive sectors, particularly in the agriculture

industry, and that this potential is yet to be realised; which has been argued to be partly due to lack of capital. This study also focuses on the interrelationship between profitability and Salam mode of finance. This to find out whether the banking industry in Sudan is well positioned to play a major role in enhancing the agriculture sector.

Aside from identifying the main profitability determinants, the research also aims to provide evidence on the impact of the structure of corporate governance of these banks on their profitability and risk-taking behaviour. In this respect, three factors – gender diversity in top management, educational background of the members of the top management team and size of the board of directors – are focused upon.

The general consensus in the area of performance determinants reveals that the widely used linear parametric econometric approach form is the relevant functional form for examining the determinants of bank performance. Studies such as Short (1979), Bourke (1989), Molyneux and Thornton (1992), Bashir (2000), Naceur (2003), Hassan and Bashir (2003), Goddard *et al*., (2004) and Athanasoglou *et al.,* (2005) prove that the linear regression form is widely used in the literature to estimate the impact of various factors that may be important in explaining bank profits. These studies also provide evidence that the linear regression estimation produces reliable findings that are equal to any other functional form.

Accordingly, to achieve the study objectives, the study follows previous studies' methodology, the study uses linear regression to identify and evaluate the interrelationship between the performance measure and the main performance determinants of Sudanese Islamic bank.

To generate a comprehensive picture of such interrelationship, three models of performance measures and determinant are built. These models then use performance measures (indicated by profitability and risk) as dependent variables and performance determinants (financial and industry indicators, gender diversity and educational background amongst corporate governors) as independent variables.

The first model investigates the nature of the interrelationship between profitability as a performance measure and a comprehensive set of determinants. To measure the

profitability, the Return on Assets (ROA) and Return on Equity (ROE) are used as dependent variables.

The profitability determinants, which represent the independent variables are the banks' age, size and type as measured by ownership and specialisation. This also includes capitalisation, liquidity, credit risk, leverage, operational efficiency, staff expenses, and assets utilisation. The set also includes profit and loss sharing (Modarabah and Mosharkah), non-profit and loss sharing (Morabahah) and Salam mode of finance. These are all established types of modes of finance upon which Islamic Banking operations are based.

The second model focuses on the impact of corporate governance on profitability. It consists of six sub-models through which the study can identify and compare the effect of gender diversity in top management positions, at the departmental levels and board of directors, on financial performance. This model also focuses on how corporate governance, in terms of the size of the board of directors, influences bank profitability. ROA and ROE are used as dependent variables whilst gender diversity on the board of directors, gender diversity in senior management positions and size of the board of directors are the independent variables. This model also uses variables that proved to be significant for the first model as control variables.

The third model focuses on the banks' risk-taking behaviour as a performance measure, whilst gender diversity and educational background of the board of directors and departmental managers as performance determinants. Risk taking behaviour is measured by capital adequacy, equity to assets ratio, loan loss provisions to total loan and loan loss provision to total assets. The model also uses variables that are proved to be significant for the first model as control variables.

The empirical results suggest that the main performance determinants on ROA of the entire sample are capitalisation and assets utilisation, which have a positive and significant impact, indicating that any increase in capitalisation or improvement in the internal monitoring and future planning concerning optimal use of assets will increase the profitability of Sudanese Islamic Banks.

Additionally, ROA is significantly adversely affected by operation efficiency, indicating that Sudanese Islamic Banks are unable to transfer their operational efficiency to their customers. The result also shows that leverage has a negative impact on the profitability of these banks, indicating that the management of these banks lacks the capability to predict and avoid the risk associated with leverage. With regards to bank age, finding prove that newly established banks are able to create better profits opportunity than old established Sudanese banks. Furthermore, specialised banks are proved to profit opportunities due to their limited area of investment.

With regard the profitability determinants, in relation to the Islamic banking industry, only PLS (Modarabah and Mosharakah) is found to have a significant impact, with positive signs on both ROA and ROE. This is due to the policy of the Central Bank of Sudan which encourage banks to use Mosharakah mode of financing all economic activities as well as giving each bank the right to determine the Modarabah's percentage share in the profits.

Furthermore, bank size is proved to have no significant impact on the profitability of Sudanese Islamic banks, which could be related to the high rate of inflation in the Sudanese economy. Such rate minimises the actual value of Sudanese pounds and makes the profitability of these banks more related to the quality of investment than the quantity of their assets.

Finally, other determinants, such as liquidity and Morabaha are established to have no impact on the profitability of the entire sample of Sudanese Islamic Banks.

In relation to the impact of the examined profitability determinants on state banks and private banks, the empirical results show that private banks are more profitable than state banks. This is because their management takes more rational decisions with respect to capitalisation, credit risk, assets utilisation, leverage and liquidity.

Interestingly, the impact of PLS and Morabahah is shown to be positive and significant on the profitability of private banks, whilst prove to have an insignificant impact on the profitability of state banks. This result indicates that private banks are more committed to the PLS modes of finance than to non-PLS modes of finance. These findings could be justified by the strategies used by state and private banks. According to the 2010

annual report of the Central Bank of Sudan, although Central Bank's policy does not differentiate between the two types of banks (as it specifies the same minimum and maximum rate for the potential profit of both PLS and non-PLS modes of finance), for competition purposes, the state banks prefer to use the minimum profit rate, because they are satisfied with the profits generated from their privilege on large government projects. On the other hand, the private banks choose the maximum rate of potential profits in their quest for profit maximisation.

Evidence from the second model shows that the presence of women in departmental managers' positions has a negative and significant impact on ROE of the entire sample. This has been justified by the restricted role of women in the Islamic culture which lead women to have career development barrier. It has also been related to lack of female role model and family commitment.

Meanwhile, the impact of the size of the board of director on the profitability of Sudanese Islamic banks varies from negative and significant to insignificant which has been justified by the higher cost related to higher directors' salaries and remunerations, when compared to smaller board size. It has also been related to coordination and communication problems resulting from enlarging the board size. Such problems affect the quality of decisions taken by the board and leads to ineffective decisions and consequently poor performance.

The existence of women in the board of director is proved to be the only factor among corporate governance factors that does not have a significant influence on the profitability of Sudanese Islamic banks. This has been related to the critical mass theory, which is based on the number of females employed in a certain level of management. As the number of females on the board of directors of Sudanese Islamic Banks is limited, which, according to Joecks *et al.*, (2013), creates a skewed group that is linked with poor performance. Accordingly, the presence of females within the board of directors becomes more symbolic and their power less certain.

Findings from the third model suggest that females as departmental managers reduce bank's credit risk. It also proves to be associated with more cautious capital adequacy ratio. This provides an evidence that females departmental manager at Sudanese Islamic

banks have a risk aversion attitude and, therefore, they reduce banks' risk-taking behaviour, which leads to more performance stability of these banks.

Finally, the model proves that the proportions of PhD holders in top management positions at both departmental managers and board of directors' levels enhance the managers' understanding of decision making and risk taking techniques.

12.3 Implications for the Decision Making Process

The important roles of the banking sector, which are to act as the financial intermediator for the society and to improve the allocation of resources, creates an essential need for comprehensive studies that will enhance a more accurate decision-making process. Given the facts that this research is the first to use an inclusive set of performance determinants of Sudanese Islamic banks' performance as well as advanced econometric techniques to understand the interrelationships between the various performance measures and their determinants, findings of this study, therefore, will enhance better understanding of the interrelationships between performance measures and determinants, which can improve estimations of key inputs in the decision-making process. Such deeper understanding should provide policy and decision makers with an important part of the framework needed to provide quality outcomes.

Findings of this study provide some beneficial insights on performance determinants to the policymakers, industry leaders, as well as bank managers. Accordingly, those parties could enhance the profitability of Sudanese Islamic Banks by improving capitalisation and assets utilisation and by improving banks operation efficiency, leverage and the size of the board of directors.

industry leaders and bank managers could also benefit from the findings on Bank age which suggest that they can learn from the experience of newly established banks, as the latter are shown to be able to utilise their resources to generate more profits.

Findings of this research also reveal that privately owned banks earn higher profits compared to state owned. Accordingly, managers of state banks could possibly benefit from the resources management technique used by Private Banks. This seems

practically possible as State-owned banks face the same local conditions as Private Banks.

Evidence on higher risk aversion of women departmental managers advances the understanding of the determinants of risk-taking behaviour in Sudanese Banks, which has a broad and particular implications for bank regulators and authorities. Accordingly, measures implemented to minimise excessive risk-taking behaviour of banks should not be limited to capital requirements. Regulators may also need to improve corporate governance of Sudanese banks by including female representation in the banks' executive structures or encourage males, departmental managers, to take less risky decisions.

Finally, the findings on the impact of highly educated top management provide support for the view that regulators and industry leaders should favour employing highly educated people in both top management positions of Sudanese Islamic Banks to reduce risk-taking behaviours.

12.4 Limitations of the Thesis

Due to non-availability of data, it was difficult to get the required information relating to the market value of Sudanese Islamic Banks. Such data is neither available from the Khartoum stock exchange, as they do not keep an organised record for the average stock price for the banks during the study period, nor from banks' financial reports. As a consequence, the study uses alternative financial measures, ROA and ROE, as proxies for banks' performance. These measures have been widely used in related research.

Another limitation of this study is related to the limited number of females' representation at CEO levels in Sudanese Islamic Banks, which makes running regression analysis to examine the impact of this factor problematic.

12.5 Potential Future Research

There are limitless opportunities for future research in the Islamic Banking Industry; whether they operate as a single banking system or side by side with traditional banks. A few possible future research areas that relate to the findings of this research and to the

broad subject of Islamic Banks financial performance include: in the area of cost and profit efficiency levels, including a comparative analysis of the efficiency of these banks across countries and between conventional and Islamic banks. In addition, further research may focus on the perceptions of policymakers, industry leaders and bank managers on the main performance determinants of Islamic Banks in general and Sudanese Islamic banks in particular. Other issues that could be covered in future research include the relationship between Islamic Banks performance and their sources and uses of funds. Such research may possibly examine whether banks' policies effectively encourage sources of funds that are linked to better banks performance. It may also be interesting to carry out the same research but with comparisons among countries that completely adhere to the Islamic Financial System.

References

Abdel Mohsin, M. I. (2005) 'The Practice of Islamic Banking System In Sudan', Journal of Economic Cooperation, Vol. 26(4), pp. 27- 50.

Abdul Rahim, A., (2007), 'Islamic Micro finance: A Missing Component in Islamic Banking', Kyoto Bulletin of Islamic Area Studies, Vol. 1(2) pp. 38-53.

Abedifar P., Molyneux, P. and Tarazi, A. (2012), 'Risk in Islamic Banking' Review of Finance, Available At Oxfordjournals.Org.

Abeysekera, I. (2010), 'The Influence of Board Size on Intellectual Capital Disclosure by Kenyan Listed Firms', Journal of Intellectual Capital, Vol. 11 (4), pp. 504-518.

Aburime, T. U. (2008) 'Determinants of Bank Profitability: Company-Level Evidence from Nigeria', Available At SSRN 1106825.

Adams, R. and Ferreira, D. (2008), 'Women in the Boardroom and Their Impact on Governance and Performance', CEI Working Paper Series, No. 2008-7, Hitotsubashi University.

Adams, R. B. and Mehran, H. (2005), 'Corporate Performance, Board Structure and Their Determinants in the Banking Industry' Journal of Financial Intermediation, Available At Http://Ssrn.Com/Abstract=302593.

Adams, R.B. and Funk, P. (2012), 'Beyond The Glass Ceiling: Does Gender Matter?', Management Science, Vol. 58, pp. 219-235.

Ahmed, Gaffar Abdalla (2007) Participatory finance in Sudanese banking system: Perceptions on performance, obstacles and prospects, Durham theses, Durham University.

Agarwal, S. and Wang, F.H. (2009), 'Perverse Incentives At The Banks? Evidence from a Natural Experiment', Working Paper, Federal Reserve Bank of Chicago.

Agnew, J., Balduzzi, P. and Sunden, A. (2003), 'Portfolio Choice and Trading In A Large 401(K) Plan', American Economic Review, Vol. 93, pp. 193-215.

Ahern, K.R. and Dittmar, A. K. (2011), 'The Changing of The Boards: The Impact On Firm Valuation Of Mandated Female Board Representation' Quarterly Journal of Economics, Vol. 127 (1), pp. 137–197.

Ahmad, S., Nafees, B. and Khan, Z. A., (2012), 'Determinants of Profitability of Pakistani Banks: Panel Data Evidence for the Period 2001-2010', Journal of Business Studies Quarterly, Vol. 4(1), pp. 149-165.

Ahmed, G. A. (2008), 'The Implication of Using Profit and Loss Sharing Modes of Finance In The Banking System, With A Particular Reference To Equity Participation (Partnership) Method In Sudan', Humanomics, Vol. 24(3), pp. 182-206.

Akhtar, M. F., Ali, K. and Sadaqat, S. (2011), 'Factors Influencing The Profitability of Islamic Banks of Pakistan', International Research Journal of Finance and Economics, 66 (1) pp. 125-132.

Alam, N., Magboul, I. H. and Raman, M. (2010), 'Challenges Faced By Sudanese Banks In Implementing Online Banking: Bankers' Perception.' Journal of Internet Banking and Commerce, Vol 15(2), pp. 1-9.

Al-Deehani, T., Karim, R. A. and Murinde, V. (1999), 'The Capital Structure of Islamic Banks Under The Contractual Obligation of Profit Sharing', International Journal of Theoretical and Applied Finance, Vol. 2(03), Pp243-283.

Alexandrina, C. (2011), 'Do Corporate Governance 'Actors'' Features Affect Banks' Value? – Evidence from Romania', Procedia - Social and Behavioral Sciences, Vol. 24, pp. 1311–1321.

Ali, K., Akhtar, M. F. and Ahmed, H. Z., (2011). 'Bank-Specific and Macroeconomic Indicators of Profitability -Empirical Evidence From The Commercial Banks of Pakistan', International Journal of Business and Social Science, Vol. 2(6), pp. 235-242.

Ali, S. and Farrukh, F. (2013), 'Islamic Banking: Is The Confidence Level of Being An Islamic Banking Employee Better Than Conventional Banking Employee? An Exploratory Study Regarding Islamic Banking', Journal of Business Studies Quarterly, Vol. 4(3) P. 27.

Aljifri, K. and Khandelwal, S. K. (2013), 'Financial Contracts In Conventional and Islamic Financial Institutions: An Agency Theory Perspective', Review of Business & Finance Studies, Vol. 4(2), pp. 79-88.

Alkassim, F. A. (2005), 'The Profitability of Islamic and Conventional Banking in The GCC Countries: A Comparative Study', Journal of Review of Islamic Economics, Vol. 13(1), pp. 5-30.

Al-Musalli. M. A. and Ismail, K. I. (2012), 'Corporate Governance, Bank Specific Characteristics, Banking Industry Characteristics, And Intellectual Capital (Ic) Performance Of Banks in Arab Gulf Cooperation Council (Gcc) Countries', Asian Academy of Management Journal of Accounting and Finance, Vol. 8 (1), pp. 115–135.

AL-Omar, H. and AL-Mutairi, A. (2008), 'Bank-Specific Determinants of Profitability: The Case of Kuwait', Journal of Economic and Administrative Sciences, Vol. 24(2), pp. 20-34.

Alper, D. and Anbar, A. (2011), 'Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability, Empirical Evidence from Turkey', Business and Economics Research Journal, Vol. 2(2), pp. 139-152.

Al-Saidi, M. and Al-Shammari, B. (2013), 'Board Composition and Bank Performance In Kuwait: An Empirical Study', Managerial Auditing Journal,Vol. 28 (6), pp. 472-494.

Al-Tamimi, H. A. (2006), 'The Determinants of the UAE Commercial Banks' Performance: A Comparison of the National and Foreign Banks.' Journal of Transnational Management, Vol (4), pp. 35-47.

Al-Tamimi, H., Hussein, A. and Jellali, N.,(2013), 'The Effects of Ownership Structure and Competition on Risk-Taking Behavior: Evidence from UAE Conventional and Islamic Banks', The International Journal of Business and Finance Research, Vol. 7(2), pp.115-124.

Altunbas, Y., Evans, L. and Molyneux, L. (2001), 'Bank Ownership and Efficiency.' Journal of Money Credit and Banking, pp. 926-954.

Amba, M. S. and F. Almukharreq (2013), 'Impact of the Financial Crisis on Profitability of the Islamic Banks Vs Conventional Banks-Evidence From GCC.'International Journal of Financial Research, Vol. 4(3), P83.

Ammari, A., Mohamed, K. and ELLOUZE, A. (2014), 'Board Structure and Firm Performance: Evidence from French Firms Listed In SBF', International Journal of Economics and Financial Issues, Vol. 4(3), pp. 580-590.

Andres, P. and Vallelado, E. (2008), 'Corporate Governance in Banking: The Role of the Board of Directors', Journal of Banking & Finance, Vol. 32, pp. 2570–2580.

Ansari, S. and Siddique, M. A. (2013), 'Comparative Corporate Governance Practices by Islamic and Conventional Banks in Pakistan',

Ariff, M. (1988), 'Islamic Banking', Asian-Pacific Economic Literature, Vol. 2(2), pp. 48-64.

Atemkeng, T. and Nzongang J. (2006), 'Market Structure and Profitability Performance In The Banking Industry of CFA Countries: The Case of Commercial Banks In Cameroon,' Journal of Sustainable Development In Africa, Vol. 8(2), pp. 1-14.

Atemnkenf, T. and Joseph, N. (2006) 'Market Structure and Profitability Performance In The Banking Industry of CFA Countries: The Case of Commercial Banks In Cameroon', Journal of Sustainable Development In Africa, Vol. 8(2), pp. 1-14.

Athanasoglou, P. Brissimisa, P. Matthaios S. N. and Delis, D. (2008), 'Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability', Journal of International Financial Markets, Institutions and Money, Vol. 18(2), pp. 121-136.

Athanasoglou, P., Delis, M. and Staikouras, C. (2006), 'Determinants of Bank Profitability in the South Eastern European Region', MPRA Paper.

Background Notes on Countries of the World: Republic of the Sudan, Jan2012

Baliga, B., Moyer, R.C. and RAO, R., 1996. CEO duality and firm performance: what's the fuss?. Strategic management journal, 17(1), pp.41-53.

Baltagia, B. H., Bressonb, G. and Pirottec, A. (2003), 'Fixed Effects, Random Effects or Hausman–Taylor? A Pretest Estimator', Economics Letters 79 pp. 361–369, Available At Www.Elsevier.Com/ Locate /Econbase.

Barber, M. B. and Odean, T. (2001), 'Boys Will Be Boys: Gender, Overconfidence and Common Stock Investment', the Quarterly Journal of Economics, by the President and Fellows of Harvard College and the Massachusetts Institute of Technology.

Barsky, B. F., Juster, T., Miles, Kimball, S. and Shapiro, S. M., (1997), 'Preference Parameters and Behavioral Heterogeneity: An Experimental Approach in the Health and Retirement Study,' Quarterly Journal of Economics, pp. 537–579.

Bashir, A. (2001), 'Determinants of Profitability and Rate of Return Margins in Islamic Banks: Some Evidence from the Middle East. In: Seventh Annual Conference, Amman- Jordan, 26 -29 October.

Bashir, A.-H. M. (1999), 'Risk and Profitability Measures in Islamic Banks: The Case of Two Sudanese Banks.' Islamic Economic Studies, Vol. 6(2), pp. 1-24.

Bashir, B. (1984), 'Successful Development of Islamic Banks.' Journal of Research in Islamic Economics, Vol. 1(2), pp. 39-54.

Beck, T. and Kunt A. (2006), 'Small and Medium-Size Enterprises: Access to Finance as A Growth Constraint', Journal of Banking & Finance, Vol. 30(11), pp. 2931-2943.

Beck, T. Behr, P. and Güttler, A. (2009), 'Gender and Banking: Are Women Better Loan officers?' Review of Finance, Vol. 17, pp. 1279-1321.

Bellucci, A., Borisov, A. and Zazzaro, A. (2010), 'Do Male and Female Loan officers differ in Small Business Lending? A Review of the Literature', Mofir Working Paper N°47.

Ben Naceur, S. and Goaied, M. (2008), 'the determinants of commercial bank interest margin and profitability: evidence from Tunisia', Frontiers in Finance and Economics, Vol. 5(1), pp.106-130.

Benamraoui, A. (2008), 'Islamic Banking: The Case of Algeria', International Journal of Islamic and Middle Eastern Finance and Management, Vol. 1(2), pp. 113-131.

Berger, A. N. and G. F. Udell (1995), 'Relationship Lending and Lines of Credit in Small Firm Finance', Journal of Business, pp, 351-381.

Berger, A., Deyoung, R. (1997), 'Problems Loans and Cost Efficiency in Commercial Banks', Journal of Banking and Finance, Vol. 21, pp. 849-870.

Berger, A., Kick, T. and Schaeck, K. (2014), 'Executive Board Composition and Bank Risk Taking', Journal of Corporate Finance, Vol. 28, pp. 48-65.

Berger, A., Klapper, L. and Ariss, R. T. (2009), 'Bank Competition and Financial Stability', Journal of Financial Services Research, Vol. 21, pp. 849-870.

Berger, P. G. and E. ofbek (1995). 'Diversification's Effect on Firm Value', Journal of Financial Economics, Vol. 37(1), pp. 39-65.

Bertand, M. and Hallock, K. (2001), 'The Gender Gap in Top Corporate Jobs', Faculty Publications - Human Resource Studies, Available At Digitalcommons@ILR: Http://Digitalcommons.Ilr.Cornell.Edu/Hrpubs/14.

Bertr and, M. and Schoar, A. (2002), 'Managing With Style: The Effect of Managers On Firm Policies', Quarterly Journal of Economics, Vol. 118, pp. 1169-1208.

Bhagat, S. and Black, B. (1999), 'The Uncertain Relationship between Board Composition and Firm Performance', Business Lawyer, Vol. 54, PP. 921–963.

Bhagat, S. and Black, B. (2002), 'The Non-Correlation between Board Independence and Long Term Firm Performance' Journal of Corporation Law, Vol. 27, pp. 231-273 A.

Bino, A. and Tomar, S. (2012), 'Corporate Governance and Bank Performance: Evidence from Jordanian Banking Industry', Jordan Journal of Business Administration, Vol. 8(2), pp. 123-141.

Bøhren, A. and Strøm, R. A. (2007), 'Informed, and Decisive: Characteristics of Value-Creating Boards', Ljubljana Meetings Pape, Available From: Reidar Øystein Strøm Aligned.

Bourke, P. (1989), 'Concentration and Other Determinants of Bank Profitability in Europe, North America and Australia,' Journal of Banking & Finance, Vol. 13(1), pp. 65-79.

Boyd, J. and De Nicolo, G. (2005), 'The Theory of Bank Risk Taking and Competition Revisited', Journal of Finance, Vol. 60(3), pp. 1329-1343.

Bozec, R. (2005), 'Boards of Directors, Market Discipline and Firm Performance', Journal of Business Finance & Accounting, Vol. 32(9), pp. 1921-1959.

Brammer, S., Millington, S. and Pavelin, S. (2007), 'Gender and Ethnic Diversity Among Uk Corporate Boards Coprorate Governance', Journal Compilation, Vol. 15 (2), pp. 393-403.

Brooks, C. (2008), 'Introductory Econometrics For Finance', SECOND EDITION, Cambridge University Press.

Bucciol, A. and Miniaci, R. (2011), 'Household Portfolios and Implicit Risk Preference', by The President and Fellows of Harvard College and The Massachusetts Institute of Technology, The Review of Economics and Statistics, Vol. 93(4), pp. 1235–1250.

Bukhari, S. B., Awan, M. H. and Ahmed, F. (2013), 'An Evaluation of Corporate Governance Practices of Islamic Banks Versus Islamic Bank Windows of Conventional Banks A Case of Pakistan', Management Research Review, Vol. 36 (4), pp. 400-416.

Cabo, R. M., Gimeno, R. and Nieto, M. (2012), 'Gender Diversity on European Banks' Boards of Directors', Journal of Business, Ethics, Vol. 109, pp. 145–162.

Campbell, K. and Vera, A. M. (2007), 'Gender Diversity in the Boardroom and Firm Financial Performance', Journal of Business Ethics, Vol. 83 (3), pp. 435–451.

Carter, D. A., Betty. F.D., Simkinsa, J. W. and Simpsona, J. W. (2007), 'The Diversity of Corporate Board Committees and Firm Financial Performance', Electronic Copy of This Paper is Available At: Http://Ssrn.Com/Abstract=9727633.

Carter, D., Simkins, B., and Simpson, W. (2003), 'Corporate Governance, Board Diversity, and Firm Value' Financial Review, 38, pp. 33–53.

Catalyst (2004), 'the Bottom Line: Connecting Corporate Performance and Gender Diversity', New York, NY, Available At: Http://Www.Catalyst.Org/.

Central Bank of Sudan Policies 2010, http://cbos.gov.sd/en/node/69.

Charness, G. and Gneezy, U. (2012), 'Strong Evidence for Gender Differences in Risk Taking', Journal of Economic Behavior & Organization, Vol. 83(1), pp. 50-58.

Cheng, S., Evans, J.H. and Nagarajan, N.J.(2007), 'Board size and firm performance: the moderating effects of the market for corporate control', Review of Quantitative Finance and Accounting, Vol. 31(2), pp.121-145.

Chirwa, E. W. (2003), 'Determinants of Commercial Banks' Profitability in Malawi: A Co-integration Approach', Applied Financial Economics, Vol. 13(8), pp. 565-571.

Chong, B. S. and Liu, M.H. (2009), 'Islamic Banking: Interest-Free or Interest-Based?' Pacific-Basin Finance Journal, Vol. 17(1), pp. 125-144.

Christiansen, C., J., Joensen, S. and Rangvid, J. (2008) Are Economists More Likely To Hold Stocks?', Review of Finance, Vol. 12, pp. 465–96.

Cihak, M. and Hesse, H. (2008), 'Islamic Banks and Financial Stability: An Empirical Analysis.' IMF Working Papers, P.1-29.

Claessens, S., Demirgüç-Kunt, A. and Huizinga, H. (1999), 'How does foreign entry affect domestic banking markets?', Journal of Banking & Finance, Vol. 25(5), pp.891-911.

Coles, J., Daniel, N. and Naveen, L. (2008), 'Boards: Does One Size Fit All?', Journal of Financial Economics, Vol., 87 (2), pp. 329-356.

Croson, R. and Gneezy, U. (2009), 'Gender Differences in Preferences', Journal of Economic Literature, Vol. 47(2), pp. 448-474.

Dahya, J., McConnell, J.J. and Travlos, N.G.(2002), 'The Cadbury committee, corporate performance, and top management turnover', Journal of finance, pp.461-483.

Dar, H. A. and Presley, J. R. (2000), 'Lack of Profit Loss Sharing In Islamic Banking: Management and Control Imbalances', International Journal of Islamic Financial Services, Vol. 2(2), pp. 3-18.

Deehani, T. and Karim, R. A. (1999), 'The Capital Structure of Islamic Banks Under The Contractual Obligation of Profit Sharing', International Journal of Theoretical and Applied Finance, Vol. 2(3), pp. 243-283.

Derbel, H., T. Bouraoui and Dammak, N. (2011), 'Can Islamic Finance Constitute A Solution To Crisis?' International Journal of Economics and Finance, pp. 3(3), P75.

Deyoung, R. and Rice, T. (2004), 'Noninterest Income and Financial Performance at US Commercial Banks.' Financial Review, Vol. 39(1), pp. 101-127.

Dezső, C. L. and Ross, D. G. (2011), 'Does Female Representation in Top Management Improve Firm Performance? A Panel Data Investigation' Electronic Copy Available At: Http://Ssrn.Com/Abstract=1088182.

Dietrich, A. and Wanzenried, G. (2009), 'What Determines The Profitability of Commercial Banks? New Evidence from Switzerland, 12th Conference of the Swiss Society for Financial Market Researches, Geneva. Discussion Paper.

Dusuki, A. and Abdullah, N., (2007), 'Why Do Malaysian Customers Patronise Islamic Banks?' International Journal of Bank Marketing, Vol. 25(3), pp. 142-160.

Dusuki, A. W. (2007), 'Banking for The Poor: The Role of Islamic Banking In Micro finance Initiatives', Proceedings of The 2nd Islamic Conference Organized By Faculty of Economics and Muamalat, Islamic Science-University of Malaysia.

Dutta, P. and Bose, S., (2006), 'Gender Diversity In The Boardroom and Financial Performance of Commercial Banks: Evidence From Bangladesh', The Cost and Management, Vol. 34 (6), pp. 70-74.

Ebrahim, M. S and Joo, T.K. (2001), 'Islamic Banking in Brunei Darussalam', International Journal of Social Economics, 28 (4), pp. 314-337.

Eisenberg, T.S., Sundgren, S. and Wells, M.T. (1998), 'Larger Board Size and Decreasing Firm Value In Small Firms', Journal of Financial Economics, Vol. 48(1), pp. 35-54.

Eljelly, A. A. and Elobeed, A. A. (2013), 'Performance Indicators of Banks in A Total Islamic Banking System: The Case of Sudan', International Journal of Islamic and Middle Eastern Finance and Management, Vol. 6 (2), pp. 142-155.

Fahlenbrach, R. and Stulz, R. (2011), 'Bank CEO Incentives and the Credit Crisis', Journal of Financial Economics, Vol. 99, pp, 11-26.

Farrell, K. and Hersch, P. (2005), 'Additions To Corporate Boards: The Effect of Gender', Journal of Corporate Finance, Vol. 11, pp. 85-106.

Flamini, V., McDonald, C. and Schumacher, L. (2009), 'The Determinants of Commercial Bank Profitability in Sub-Saharan Africa', Working Paper, WP/09/15, International Monetary Fund.

Francoeur, C., Labelle, R. and Desgagne, B. C. (2007), 'Gender Diversity in Corporate Governance and Top Management', Journal of Business Ethics, pp. 81-95, Electronic Copy Available At: Http://Ssrn.Com/Abstract=1159472.

Ghannadian, F.F. and Gautam, G. (2004), 'Developing Economy Banking: The Case of Islamic Banks', International Journal of Social Economics, Vol. 31 (8), pp. 740-752.

Gillan, S. (2006), 'Recent Developments in Corporate Governance: An Overview', Journal of Corporate Finance Vol. 12, pp. 381– 402.

Gjerde, Q., KNIVSFLÅ, K. and SÆTTEM, F., (2008), 'The Value-Relevance of Adopting IFRS: Evidence From 145 NGAAP Restatements', Discussion Paper of Norwegian School of Economic and Business Administration.

Goddard J., M. P. A. J. W., (2004), 'Dynamics of Growth and Profitability in Banking', Journal of Money, Credit and Banking, Vol 72(3), pp. 1069-1090.

Goddard, J. Molyneux, P. and Wilson, J.O. S. (2004), 'the Profitability of European Banks: A Cross-Sectional and Dynamic Panel Analysis', the Manchester School, Vol. 72(3), pp. 363–381.

Goel, A. M., and A V. Thakor, (2008), 'Overconfidence, CEO Selection, and Corporate Governance', Journal of Finance, Vol. 63, pp. 2737-2784.

Grable, J.E., (2000), 'Financial risk tolerance and additional factors that affect risk taking in everyday money matters', Journal of Business and Psychology, Vol. 14(4), pp.625-630.

Graham, R. and Harvey, R. (2001), 'The Theory and Practice of Corporate Finance: Evidence From The Field', Journal of Financial Economics, Vol. 60, pp. 187-243.

Guest, P.M. (2009), 'the Impact of Board Size on Firm Performance: Evidence From The UK'. The European Journal of Finance, Vol. 15(4), pp.385-404.

Gujarati, D.N. (2004), Basic econometrics. The McGraw−Hill Companies, 2004

Gulamhussen, M. A. and Santa, S. (2010), 'Women in Bank Boardrooms and Their Influence on Performance and Risk-Taking', Available At Http://Ssrn.Com/Abstract=1615663.

Gulhan and Uzunlar, E. (2011), 'Factors Affecting the Profitability of The Bank: For Application On The Turkish Banking Sector', Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, Vol. 15 (1)

Guru, B. K., Staunton, J. and Shanmugam, B. (2002), 'Determinants of Commercial Bank Profitability in Malaysis', University Multimedia Working Papers.

Haniffa, R. and Hudaib, M. (2006), 'Governance Structure and Firm Performance of Malaysian Companies', Journal of Business Finance & Accounting, Vol. 33 (8), pp. 1034-1062.

Haron, S. (1996a), 'The Effects of Management Policy On The Performance of Islamic Banks', Asia Pacific Journal of Management, Vol. 13(2), pp. 63-76.

Haron, S. (1996b) 'Competition and Other External Determinants of the Profitability of Islamic Banks', Islamic Economic Studies, Vol. 4(1), pp. 49-66.

Haron, S. and Azmia, W. N. W., (2004), 'Profitability Determinants of Islamic Banks A Co-integration Approach' The Paper Was Presented At The Islamic Banking Conference, Union Arab Bank, Beirut, Lebnon 5-7 December 2004.

Haron, S., (2004), Determinants of Islamic Bank Profitability, The Global Journal of Finance and Economics, Vol. 1(1), pp. 1-22.

Harris, M. and Raviv, A. (2008), 'A Theory of Board Control and Size', Review of Financial Studies, 21, pp. 1797-1832.

Haslem, J. A. (1968), 'A Statistical Analysis of The Relative Profitability of Commercial Banks', The Journal of Finance, pp. 167-174.

Hassan, M. K. and Lewis, M. K. (2007), 'H and book of Islamic Banking' Published by Elgar Original Reference.

Hassan, M. K. and. Bashir, A. H. (2003), Determinants of Islamic Banking Profitability, 10th ERF Annual Conference, Morocco.

Heffernan, S. A. and Fu, X. (2010), 'The Determinants of Bank Performance in China', Applied Financial Economics, Vol. 20, pp. 1585–1600.

Holden, K. and EL-Bannany, M. (2004), 'Investment in Information Technology System and Other Determinants of Bank Profitability in the UK', Journal of Applied Financial Economics, Vol. 14(5), pp. 361-365.

Hsiao, C. (2005), 'Why Panel Data?', Singapore Economic Review, Vol. 50 (2), pp. 143–154.

Hussein, K. A. (2003), 'Operational Efficiency in Islamic Banking: The Sudanese Experience' Islamic Research & Training Institute (IRTI), Working Paper.

Iannotta, I., Nocera, G. and Sironi, A. (2007), 'Ownership Structure, Risk and Performance In The European Banking Industry', Journal of Banking and Finance, Vol. 31(7), pp. 2127-2149.

Ibrahim, M. F., Eng, O. S. and Parsa, A. (2009), 'Shariah Property Investment in Asia', Journal of Real Estate Literature. pp. 233-248.

Idris, A. R., Asari, F. H., Taufik, N. A., Salim, N. J. and Jusoff, R.M (2011), 'Determinant of Islamic Banking Institutions' Profitability in Malaysia', World Applied Sciences Journal 12 (Special Issue On Bolstering Economic Sustainability,

Ika, S. R. and Abdullah, N. (2011), 'A Comparative Study Of Financial Performance Of Islamic Banks and Conventional Banks in Indonesia', International Journal of Business and Social Science. Vol. 2 (15), pp 199-207.

Iqbal, M. (2001), 'Islamic Banking and Finance: New Perspectives on Profit Sharing and Risk Cheltenham', Islamic Economic Studies, Vol. 8(2).

Iqbal, M. and Molyneux, P. (2005), 'Thirty Years of Islamic Banking: History, Performance and Prospects' Islamic Econ., Vol. 9(1), pp. 37-39.

Iqbal, M., Ausaf, A. and Khan, T. (1997), 'Challenges Facing Islamic Banking', Available Online From: Http: //Www. Irtipms. Org/Opensave.

Izhar, H. and Asutay M. (2007), Estimating the Profitability of Islamic Banking: Evidence from Bank Muamalat Indonesia', Review of Islamic Economics, Vol. 11(2), pp. 17–29.

Javaid, S. Anwar, J. Zaman, Y. and Gafoor, A., (2011), 'Determinants of Bank Profitability in Pakistan: Internal Factor Analysis', Mediterranean Journal of Social Sciences, 2(1), pp. 60-78.

Jensen, M.C. (1993), 'The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems', Journal of Finance, Vol. 48(3), pp. 831-880.

Jianakoplos, A., and Bernasek, A., 1998), 'Are Women More Risk Averse?', Economic Inquiry, Vol. 36, pp. 620-630.

Joecks, J., Pull, K. and Vetter, K. (2013). 'Gender Diversity in The Boardroom and Firm Performance: What Exactly Constitutes A "Critical Mass?", Journal of business ethics, Vol. 118(1), pp.61-72.

Kabir Hassan, M., Sanchez, B. and Faisal Safa, M.(2013), 'Impact of financial liberalization and foreign bank entry on Islamic banking performance', International Journal of Islamic and Middle Eastern Finance and Management, Vol. 6(1), pp.7-42.

Kaleem, A. and Abdul Wajid, R. (2009), 'Application of Islamic banking instrument (Bai Salam) for agriculture financing in Pakistan", British Food Journal, Vol. 111(3), pp.275 – 292

Khalfalla, L. A (2011) Socio-Economic Impacts of Privatisation on Women Made Redundant From Sudan's Banking and Manufacturing Sectors.

Kang, H., Cheng, M. and Gray, S.J. (2007), 'Corporate Governance and Board Composition: Diversity and Independence of Australian Boards', Journal of Corporate Governance, Vol. 15 (2), pp. 194-207.

Karim, B. K., Sami, B. A. S. and Hichem, B. K. (2010), 'Bank-Specific, Industry-Specific and Macroeconomic Determinants of African Islamic Banks' Profitability', International Journal of Business and Management Science, Vol. 3(1), pp. 39-56.

Khan, M. and Mirakhor, A., (1990), 'Islamic Banking: Experiences in the Islamic Republic of Iran and In Pakistan', Economic Development and Cultural Change, 38 (2), pp. 353-375.

Khan, M. S. N., Hassan, M. K and Shahid, A. I. (2007), 'Banking Behaviour of Islamic Bank Customers In Bangladesh', Journal of Islamic Economics, pp. 160-194

Kosmidou, A. and Zopounidis, C. (2008), 'Measurement of Bank Performance In Greece' South-Eastern Europe Journal of Economics, pp. 79-95.

Kouser, R., Aamir, M., Mehvish, H. and Azeem, M. (2011), 'Camel Analysis for Islamic and Conventional Banks: Comparative Study From Pakistan', Economics and Finance Review, Vol. 1(10) pp. 55 – 64.

Kramer, V.W., Konrad, A.M. and Erkut S. (2006), 'Critical Mass On Corporate Boards: Why Three Or More Women Enhance Governance', Wellesley Centres For Women. Report WCW.

Kunt, A. and Huizinga, H. (1998), 'Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence', The World Bank Economic Review, Vol. 13(2), P.379.

Lai, B. and Li, A. (2014), 'An Analysis of The Bank Specific Variables Determinants of The Operating and Financial Performance For The Licensed Banks Listed In Hong Kong Stock Exchange', Euro-Asian Journal of Economics and Finance, Vol.2(4), pp. 366-407.

Larmou, S. and Vafeas, N. (2010) 'The Relation Between Board Size and Firm Performance in Firms With A History of Poor Operating Performance', Journal of Manag Gov, Vol. 14, pp. 61–85.

Lee, S., (2012), Profitability Determinants of Korean Banks. Economics and Finance Review, 2(9), pp. 06 – 18.

Li, Y., Armstrong, A. and Clarke, A. (2014), 'Relationships of Corporate Governance Mechanisms and Financial Performance In Islamic Banks: A Meta-Analysis', Journal of Business Systems, Governance and Ethics, Vol. 9 (1), pp. 59-63.

Lipton, M. and Lorsch, J .W. (1992), 'A Modest Proposal for Improved Corporate Governance', Business Lawyer, Vol. 48, pp. 59-77.

Malmendier, U., Tate, G. and Yan, J. (2011), 'Overconfidence and Early-Life Experiences: The Effect of Managerial Traits On Corporate Financial Policies', Journal of Finance, Vol. 66(5), pp. 1687-1733.

Marinova, J., Plantenga, J. and Remery, C. (2010), 'Gender Diversity and Firm Performance: Evidence From Dutch and Danish Boardrooms', Utrecht School of Economics. Tjalling C. Koopmans Research Institute. Discussion Paper Series 10-03.

Matthew, N.G. and Esther, L.A. (2012), 'Financial performance comparison of foreign vs local banks in Ghana', International Journal of Business and Social Science, Vol. 3(21), pp.82-87.

Maudos, J., Pastor, J.M., Perez, F. and Quesada, J.(2002), 'Cost and profit efficiency in European banks', Journal of International Financial Markets, Institutions and Money, Vol.12(1), pp.33-58.

Metcalfe, B. D. (2006), 'Exploring Cultural Dimensions of Gender and Management in The Middle East', Thunderbird International Business Review, Vol. 48(1), pp. 93–107.

Micco, A. Panizza, U. and Yanz, M. (2007), 'Bank Ownership and Performance. Does Politics Matter?', Journal of Banking & Finance, Vol. 31, pp. 219–241.

Mohsin, A. (2005), 'The Practice of Islamic Banking in Sudan', Economic Corporation, Vol. 26(4), pp. 27 - 50.

Molyneux, P. and Thornton, J. (1992), Determinants of European Bank Profitability: A Note, Journal of Banking and Finance, Vol. 16, pp. 1174-1178.

Naceur, S. and Goaied, M. (2001), 'The Determinants of the Tunisian Deposit Banks' Performance', Applied Financial Economics, Vol. 11(3), P.317.

Naceur, S., (2003), 'the Determinants of the Tunisian Banking Industry Profitability: Panel Evidence', University Libre De Tunis Working Papers.

Navarro, A. and Gallo, A. (2014), 'The Female CEO In Developing Countries' Firms', Electronic Copy Available At: Http://Ssrn.Com/Abstract=2405558

Navarro, A. I. and Gallo, A. (2014), 'The Female CEO in Developing Countries' Firms', Http://Ssrn.Com/Abstract=2405558.

Noor, M. A. and Ahmad, N. H. (2011), 'Relationship between Islamic Banking Profitability and Determinants of Efficiency', the IUP Journal of Managerial Economics, Vol. 9(3), pp. 43–87.

Nyamongo, E. M. and Temesgen, K. T. (2013), 'The Effect of Governance on Performance of Commercial Banks In Kenya: A Panel Study', Vol. 13 (3), pp. 236-248, Emerald Group Publishing Limited.

Oakley, J. G. (2000), 'Gender-Base Barriers to Senior Management Positions: Understanding the Scarcity of Female CEO's', Journal of Business Ethics, Vol. 27 (4), pp. 321-334.

Othman, J. (2013), 'Analysing Financial Distress in Malaysian Islamic Banks: Exploring Integrative Predictive Methods', Durham Theses,. Available At Durham E-Theses Online: Http://Etheses.Dur.Ac.Uk/6377/.

Pathan, S. and Skully, M. (2010), 'Endogenously Structured Boards of Directors in Banks', Journal of Banking and Finance, Vol. 34(7), pp. 1590-1606.

Pathan, S., Haq, M. and Gray, P. (2012), 'Does Board Structure in Banks Really Affect Their Performance?', Electronic Copy Available At: Http://Ssrn.Com/Abstract=1979297.

Podestà, F.,(2002), 'Recent developments in quantitative comparative methodology: the case of pooled time series cross-section analysis',. DSS Papers Soc, Vol. 3(2), pp.5-44.

Pettitt, A.N., 1979. A non-parametric approach to the change-point problem. Applied statistics, pp.126-135.

Prete, S. and Stefani, M. L. (2013), 'Women on Italian Bank Boards: Are They 'Gold Dust'?', Occasional Papers Printed By The Printing and Publishing Division of The Bank of Italy.

Qudah, A. and Jaradat, A. (2013), 'the Impact of Macroeconomic Variables and Banks Characteristics on Jordanian Islamic Banks Profitability: Empirical Evidence', International Business Research, 6(10), pp. 153-162.

Raheja, C. G. (2005), 'Determinants of Board Size and Composition: A Theory of Corporate Boards', Journal of Financial and Quantitative Analysis, Vol. 40(2), pp. 283-306.

Ramadan, I. (2011), 'Bank-Specific Determinants of Islamic Banks Profitability: An Empirical Study of the Jordanian Market', International Journal of Academic Research, Vol. 3 (6), pp. 74-80.

Reinert, M., Florian, W. and Winnefeld, H. (2015) 'Does Female Management Influence Firm Performance? Evidence from Luxembourg Banks', Winnefeld working papers on finance no. 2015/1 swiss institute of banking and finance (s/bf – hsg).

Robb, A. M. and Watson, J. (2012) 'Gender Differences In Firm Performance: Evidence From New Ventures In The United States', Journal of Business Venturing, Vol. 27, pp. 544–558.

Rose, C. (2007), 'Does Female Board Representation Influence Firm Performance? The Danish Evidence', Corporate Governance, Vol. 15(2), pp. 404-413.

ROSL, Y. S. A. and Abubakar, M. (2003), 'Performance of Islamic and Mainstream Banks In Malaysia', International Journal of Social Economics, Vol. 30(12), pp. 1249-1265.

Rovers, M. L. (2010) 'Women on Boards and Firm performance' Electronic Copy Available At: Http://Ssrn.Com/Abstract=1586832.

Samad, A. (2004), 'Performance of Interest-free Islamic banks vis-à-vis Interest-based Conventional Banks of Bahrain', International Journal of Economics, Management and Accounting, Vol. 12(2).

Samad, A. and Hassan, K. (1999), 'The Performance of Malaysian Islamic Bank During 1984-1997: An Exploratory Study', International Journal of Islamic Financial Services, Vol. 1(3).

Samad, A. and Hassan, M. K. (1999), 'Comparative Efficiency of The Islamic Bank Vis-A-Vis Traditional Banks In Malaysia', Journal of Economics and Management, Vol. 7(1), pp. 1-25.

Samad, A. and Hassan, M.K. (2000) 'The Performance of Malaysian Islamic Bank During 1984-1997: An Exploratory Study' International Journal of Islamic Financial Services, Vol.1(3).

Sanda, A., Mikailu, A. S. and Garba, T. (2005), 'Corporate Governance Mechanisms and Firm Financial Performance in Nigeria' African Economic Research Consortium, Nairobi, Paper 149.

Sangmi, M. D. and Nazir, T. (2010), 'Analyzing Financial Performance of Commercial Banks in India: Application of CAMEL Model', Pak. Journal of Commercial. Social Science, Vol. 4(1), pp. 40-55.

Saravia, J. (2010), 'An Investigation of The Relationship Between Corporate Governance and Firm Performance', Phd Thesis From University of Surrey.

Sarker, A. (2000), 'Islamic Banking in Bangladesh: Performance, Problems and Prospects', International Journal of 1slamic Financial Services, Vol. 1(3), pp. 1-22.

Saunders, A., Cornett, M.M. and McGraw, P.A. (2006), 'Financial institutions management: A risk management approach', Vol. 8, McGraw-Hill/Irwin.

Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST), Islamabad, Pakistan, pp. 493-497.

Shahinpoor, N. (2009), 'The Link between Islamic Banking and Micro financing', International Journal of Social Economics, Vol. 36(10), pp. 996-1007.

Short, BK. (1979), 'The Relation between Commercial Bank Profit Rates and Banking Concentration in Canada', Journal of Banking and Finance, Vol. 3 (1), pp. 209-219.

Shrader, C.B., Blackburn, V.B. and Lles P. (1997), 'Women In Management and Firm Financial Value: An Exploratory Study', Journal of Managerial, Vol. 9, pp. 355–372.

Siddiqui, A. (2008), 'Financial Contracts, Risk and Performance of Islamic Banking', Managerial Finance, Vol. 34(10), pp. 680-694.

Singh, V. and Vinnicombe, S. (2004), 'Why So Few Women in Top UK Boardrooms? Evidence and Theoretical Explanations', Corporate Governance, Vol. 12, pp. 479–488.

Skała, D. and Weill L. (2015), 'Does CEO Gender Influence Bank Risk?', Forthcoming.

Smith, N., Smith, V. and Verner, M. (2006). 'Do Female In Top Management Affect Firm Performance? A Panel Study of 2500 Danish Firms', International Journal of Productivity and Performance Management, Vol. 55(7), pp. 569–593.

Sole, J. (2007), 'Introducing Islamic Banks. Journal of Islamic Economics, Banking and Finance, IMF Working Paper pp. 10-34.

Srairi, S. (2010), 'Cost and Profit Efficiency of Conventional and Islamic Banks in GCC Countries', Journal of Productivity Analysis, pp. 45-62.

Sufian, F. and Parman, S. (2009), 'Specialization and Other Determinants of Non-Commercial Bank Financial Institutions Profitability Empirical Evidence From Malaysia', Studies In Economics and Finance, Vol. 26(2), pp. 113-128.

Sudan energy report, Global Energy Market Research: Sudan, Mar2013.

Tanya, H., 2014, Parametric and Nonparametric: Demystifying the Terms. Mayo Clinic Department of Health Science, Tutorial.

Tai, L. (2015), 'The Impact of Corporate Governance On The Efficiency and Financial Performance of GCC National Banks', Middle East Journal of Business, Vol. 10(1), pp. 12-16.

Vera, B. R. (2007), 'Determinants of Profitability of Banks in India: A Multivariate Analysis', Journal of Services Research, Vol. 6 (2).

Vieito, J. P. T. (2012), 'Gender, Top Management Compensation Gap, and Company Performance: Tournament versus Behavioral Theory', Corporate Governance, Vol. 20(1), pp. 46–63.

Vijayakumar, A. (2012), 'The Assets Utilisation and Firm's Profitability: Empirical Evidence from Indian Automobile Firms', International Journal of Financial Management, Vol. 2(2), pp. 33-44.

Visser, W A.M. and Mcintosh, A. (2007), 'A Short Review of the Historical Critique of Usury', Accounting, Business & Financial History, Vol. 8(2), pp. 175-189.

Vong, P.I. and Chan, H.S.(2009), 'Determinants of bank profitability in Macao', Macau Monetary Research Bulletin, Vol. 12(6), pp.93-113.

Weill, L. (2010), 'Do Islamic Bank Have Greater Market Power', Financial and Institute of Economies in Transition.

Xie, J and Fukumoto, Y. (2013) 'A New Finding for Corporate Board Size Effects: Evidence from Japan', the Singapore Economic Review, Vol. 58(4).

Yawson, A. (2006) 'Evaluating The Characteristics of Corporate Boards Associated With Lay of Decisions', Journal Compilation, Vol. 14 (2), pp. 75-83.

Yamak, S., Ertuna, B., and Bolak, M. (2006). Sahiplik Dağılımının Birleşik Liderlik Yapısı Üzerine Etkileri. Yönetim Araştırmaları Dergisi, 6(1-2), 85-105.

Yermack, D. (1996), 'Higher Market Valuation of Companies with a Small Board of Directors', Journal of Financial Economics, Vol. 40(2), pp. 185-211.